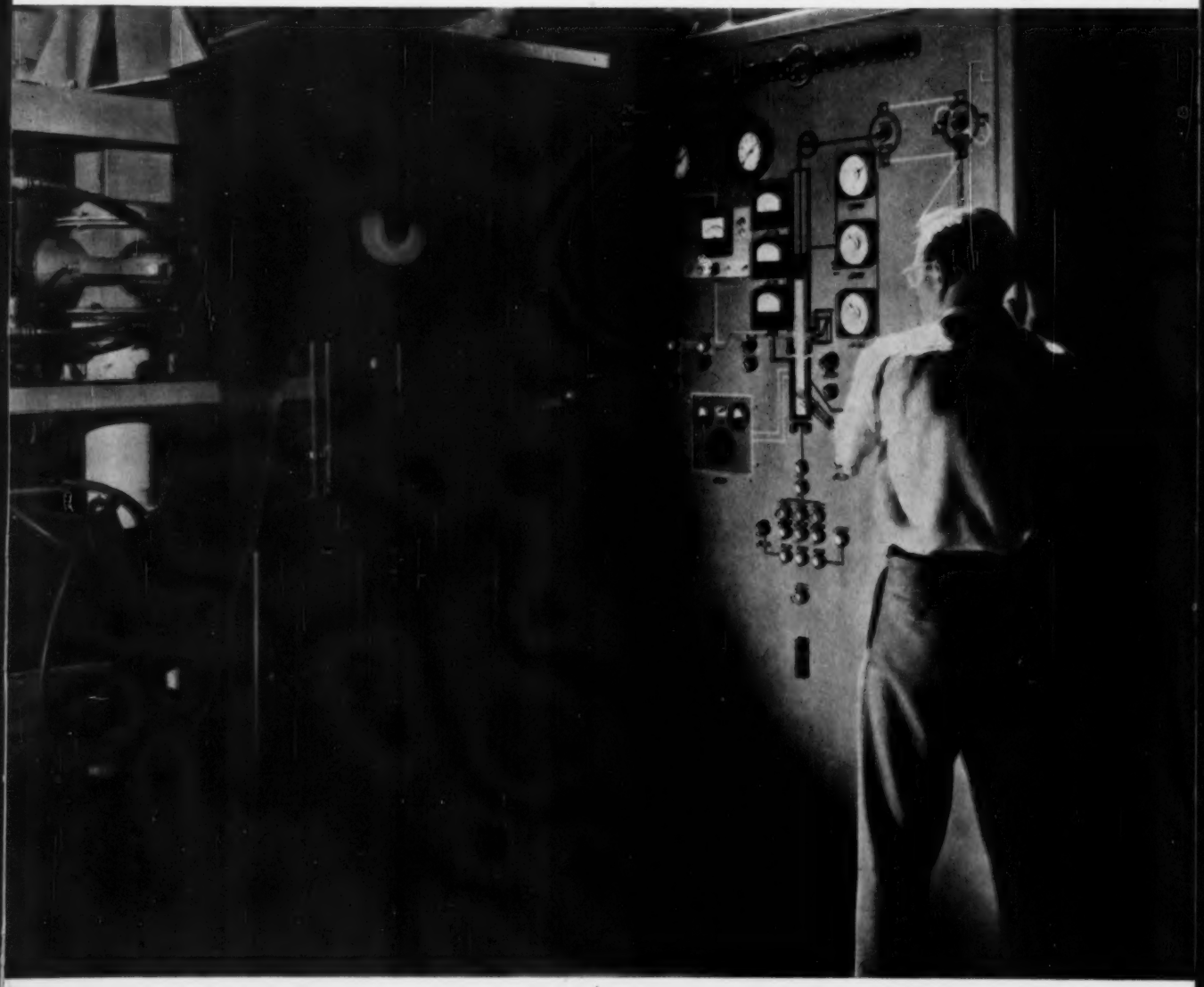
The IRON AGE

September 11, 1958 A Chilton Publication The National Metalworking Weekly



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Which Way To Better Vacuum Arc Melting? P. 163

Five-Year Outlook For Steel Demand – P. 137

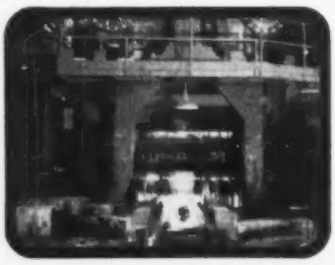
Will Competition Check Rising Price Pressures? – P. 123

Digest of the Week – P. 2-3

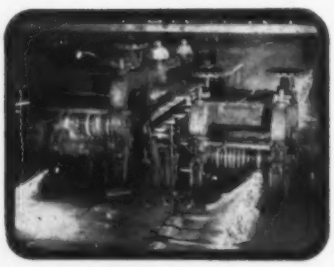
ANOTHER COPPERWELD SERVICE

complete cold finishing facilities

Electric Furnace.



Ingot entering 35" Blooming Mill.



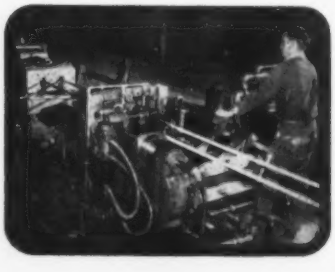
12" Bar Mill in operation.

From electric furnaces to cold finishing—close metallurgical control is the secret of the uniform quality of Aristoloy blooms, billets and bars.

Starting with select raw materials, and exercising special care in melting and teeming operations, Copperweld produces the special Aristoloy ingot. From here, conditioning, rolling, thermal treatment, and cold drawing are under the same careful scrutiny . . . the same control. The result—steels of uniform quality bearing the name Aristoloy!

Cold finished Aristoloy as well as hot rolled products are available in standard A.I.S.I. analyses, including leaded—call your Copperweld Field Metallurgist for help in selecting the best grade for your job.

New Leaded Steel Catalog now available. Write for your copy today.



Cold Drawing.

ARISTOLOY STEELS

AMERICAN STEEL WAREHOUSE ASS'N.

COPPERWELD STEEL COMPANY

Aristoloy Steel Division

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6500 tons of structural steel joined with high-strength bolts

Owner and Builder: Sam Minskoff & Sons, Inc.; Architects: Sylvan Bien & Robert L. Bien; Structural Engineers: Weinberger, Frieman, Leichtman & Quinn.

This stunning new office building at Lexington Avenue and East 51st Street is New York's first multi-storied structure clad in gold-anodized metal curtain walls. The 6500-ton steel framework for its 34 stories was erected in comparative quiet, with thousands of Bethlehem High-Strength Bolts used in joining its structural members.

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Bethlehem High-Strength Bolts are made of a good grade of carbon steel in all popular sizes. They are quenched and tempered to meet the requirements of ASTM Specification A-325. They are fully described in our 24-page illustrated booklet, "High-Strength Bolting for Structural Joints." Ask the nearest Bethlehem sales office to send you a copy.

High-Strength Bolt is used with two hardened washers, placed under head and nut.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. *On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation*

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The IRON AGE

September 11, 1958—Vol. 182, No. 11

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STEEL BOOM COMING

Says an Expert — Thomas Dimond, a well-known steel market

analyst, predicts all-time record steel production between 1959-62. But he isn't ruling out another recession in the next five years.

P. 137

RISING PRICES

Held in Check—Most makers of machinery and components are absorbing higher wage and steel costs. Competition is still rough. Few price increases are in sight. P. 123

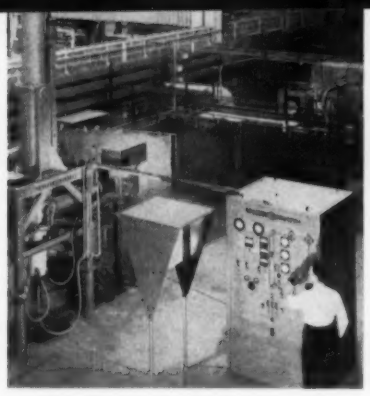
FIREBIRD III

Automatic Driving—Key factor in GM's new Firebird is not its gas turbine engine, but a forerunner of automatic controls for driving. Automatic controls can take over speed and direction in future. P. 126

ECONOMIC WAR

Let's Win It—The growing Soviet economic threat cannot be shrugged off. Her fast growing industries are gaining prestige in the

Metalworking



ARC MELTING SECRETS: Laboratory-size vacuum arc melting furnace at General Electric Co.'s Industrial Heating Dept. is turning up new facts in consumable arc remelting. It's a unit with 3000 amp direct current power supply. P. 165

world. To reverse this trend, the U. S. must make a national effort. P. 135

CONGRESSIONAL PROBES

Steel Again—Kefauver still has hopes of embarrassing the steel industry on pricing. This time his investigators are taking a new tack through fabricators. P. 147

STEEL SHOW FEATURES

VACUUM MELTING

Probe Key Variables—A test program is revealing new facts on consumable arc remelting under vacuum. It's providing some of the more important answers in current control, furnace pressure, cooling temperatures, type of electrode and their effects on ingot quality. P. 165

NUMERICAL MILL CONTROL

Punch Cards Gain—The rash of punch card systems underway points up control gains all down the line. But control men say their great needs are for more data and more instruments to get the data. They want sensing devices that are faster and more precise. P. 169

OXYGEN STEELMAKING

Demand from Openhearths—The sharp upward trend in basic oxygen steelmaking has created question as to which way openhearth practice will go—up or down. There are strong arguments both ways, but the use of oxygen in openhearths is only beginning. P. 172

IRON ORE SUPPLY

A Changing Pattern — Imports are shaping up as a real threat to domestic ores. In a year of reduced steel demand, Lake Superior shipments are way off, while imports are only 10 pct down from 1957. P. 175

ULTRASONICS

For Ingot Quality?—The Russians appear to be sold on using ultrasonic energy to make better steel ingots. But the crux of the matter is whether improved quality can be gained with full-size ingots generally used in steel mills. P. 178

MARKETS & PRICES

AUTO MARKET TEST

Coming in '59—Chrysler Corp.'s sales in the 1959 model year might show whether or not the American car buyer really prefers an all-new car to a warmed-over version of last year's model. P. 142

OIL COUNTRY

Dangerous Game—Buyers of oil country goods are taking a chance on too-low inventories. Buying plans lag way behind drilling forecasts. P. 128

TOOL LEASING

Plans Revived — The recession has brought about a revival of machine tool leasing. It's a good way for a capital-short company to get needed equipment without making a heavy capital outlay. P. 151

DELIVERY STRETCHOUT

Steel Buyers Are Edgy — Steel mill delivery promises are stretching out. Users are beginning to realize they can no longer get by on hand-to-mouth inventories. P. 223

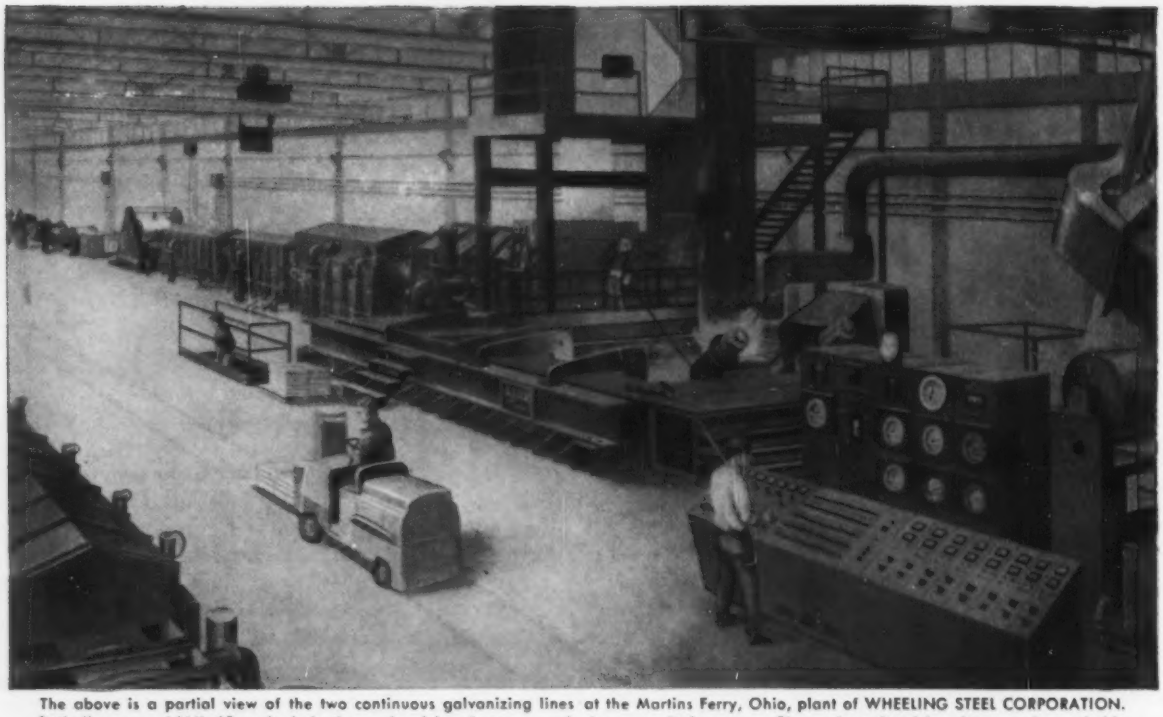
PURCHASING POLICY

Consider Value First—Buying on value rather than on price is recommended by Andy Kennedy, purchasing vice president at Westinghouse. It's sound also, he says, to support price levels which give suppliers a chance to expand. P. 224

NEXT WEEK

TOOL STEEL

It Can Be Deep Drawn—There were so many obstacles involved in deep drawing tool steel that many experts said it couldn't be done. Next week's feature will show how research and shop skill teamed up for a major breakthrough in this process.



The above is a partial view of the two continuous galvanizing lines at the Martins Ferry, Ohio, plant of WHEELING STEEL CORPORATION. Both lines use AJAX 60 cycle induction galvanizing furnaces and zinc premelt furnaces. The main galvanizing furnace shown holds 175 tons of zinc, is rated 2000 kw, and produces over 40 tons per hour at speeds in excess of 300 feet per minute. These continuous galvanizing lines produce WHEELING's patented SOFTITE sheet.

60 Cycle induction galvanizing

has progressed from small beginnings a few years ago to a present capacity of well over **one million tons per year.**

Here is an entirely new approach to an old art:

- A refractory lined hearth in place of the iron kettle eliminates kettle replacement and iron pickup, drastically reduces dross formation.
- Temperature control is precise, lag free, holds the melt at ideal galvanizing temperature at all times.
- Gentle electromagnetic circulation facilitates alloy additions, keeps alloy uniform throughout the melt.
- Clean and cool working conditions for hand dipping or continuous operations.

All these factors help to produce a galvanized coating of consistent superior quality and to attain high production at lowest unit costs.

MAY WE HAVE YOUR INQUIRY?

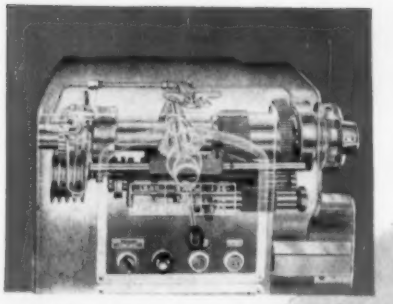
AJAX USA

ENGINEERING CORPORATION

TRENTON 7, NEW JERSEY

60 CYCLE INDUCTION MELTING

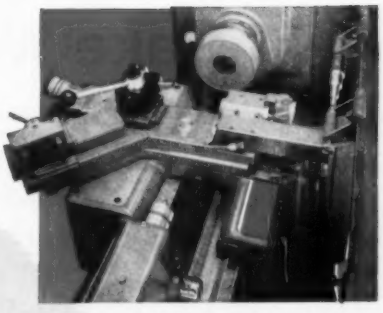
Associated Companies: Ajax Electrothermic Corporation — Ajax Electric Company



Full 5 HP—all spur gears—anti-friction bearings—automatic filtered lubrication—9 spindle speeds to 3000 RPM.

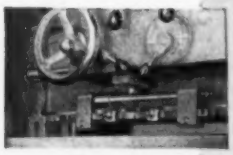
BIG

lathe features at low cost!



Compact, efficient 45° tracing mechanism—trouble-free, exclusive Lodge & Shipley design.

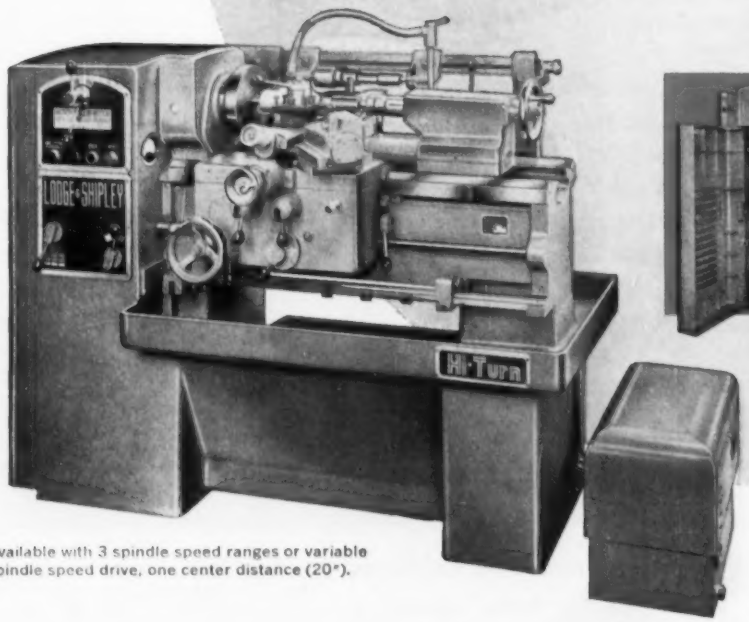
why pay $20,000 when you can buy a LODGE & SHIPLEY 1307 (10")



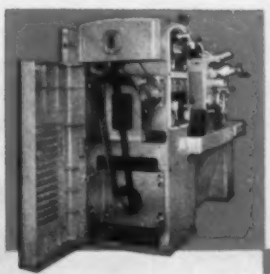
Template-type multiple length stops for duplicating shoulder lengths.

Hi-Turn COPYMATIC

TRACER LATHE for less than $10,000?



Available with 3 spindle speed ranges or variable spindle speed drive, one center distance (20").



Easily accessible and adjustable drive with Dinabrake motor.

Simple set-up for contour facing operations.

The **HI-TURN 45° COPYMATIC Tracer Lathe** is extremely rugged, built to do production jobs at time and money-saving rates. You get Lodge & Shipley quality features at a price substantially below many lathes having less horsepower and light construction. If you perform manufacturing or tracer lathe operations, put them on a lathe built to do the job at lowest cost. The features shown here are but a few of many . . . for complete details, request Bulletin DM-4 from:

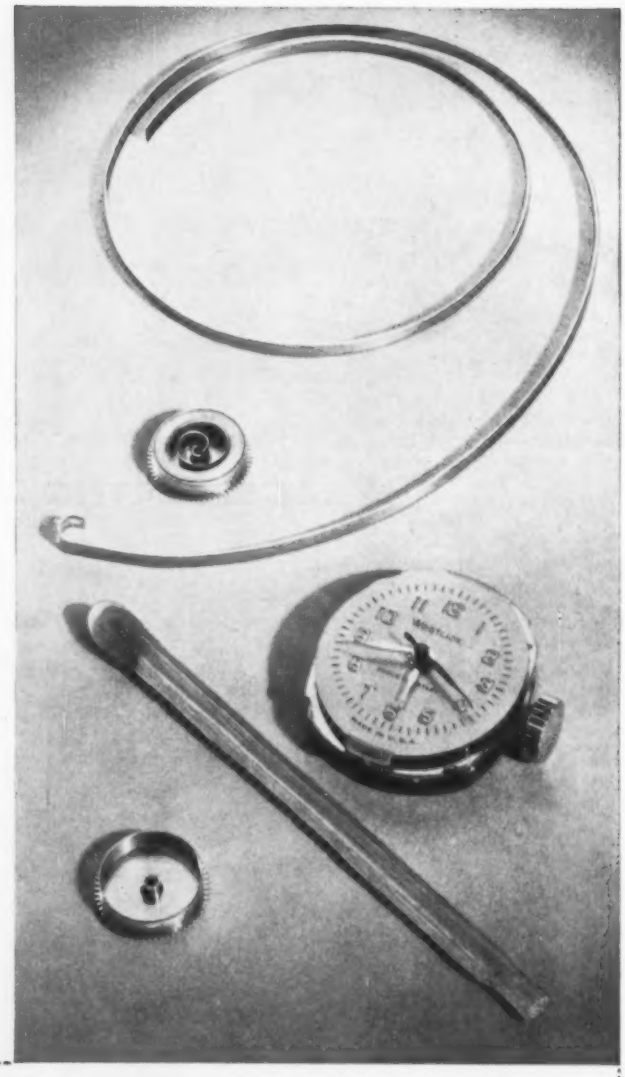
The Lodge & Shipley Co., 3073 Colerain Ave., Cincinnati 25, Ohio

UNBREAKABLE MAINSPRINGS OF ARMCO 17-7 PH STAINLESS Help Make Westclox Watch Sales "Tick"

Properties of special Armco Stainless Steel add sales points, improve performance and simplify production of watches

By using Armco's high strength stainless steel instead of regular spring steel, Westclox, producers of the famous Big Ben, eliminated the possibility of rusting and subsequent breakage of mainsprings.

In addition to this important sales advantage, the excellent spring properties of 17-7 PH insure better time-keeping. Westclox also reports that springs are easier to fabricate. A thinner mainspring is used too, resulting in space-saving and more parts per pound.



SOLVES SPRING PROBLEMS

For springs of *any* kind, especially those exposed to corrosive conditions or elevated temperatures, Armco 17-7 PH provides unusual advantages. The mechanical properties and modulus of elasticity of hard drawn wire and extra hard temper strip are comparable to music wire and are much less affected by temperatures to 650 F than either 18-8 stainless or music wire. And with resistance to corrosion that is practically equal to Type 302 stainless, it offers a valuable combination of durability and strength.

Available in sheet, strip, plate, bar and wire, Armco 17-7 PH Stainless Steel is readily fabricated into coil, flat and power springs as well as spring washers and clips.

Consider how its unusual properties can give *your* products new design and sales advantages. For complete information, just fill out and mail the coupon.

ARMCO STEEL

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The National Supply Company
Armco Drainage & Metal Products, Inc.
The Armco International Corporation
Union Wire Rope Corporation
Southwest Steel Products

New steels are born at Armco

ARMCO STEEL CORPORATION, 2098 Curtis Street, Middletown, Ohio

Send me information on Armco 17-7 PH Stainless Steel. We are considering it for

NAME

COMPANY

STREET

CITY ZONE STATE

Plan For Recovery: It Will Pay Off Later

We are in the early stages of recovery from the recession, but there is still plenty of work—and thought—ahead. Each day both are postponed the harder they will be to do—when business becomes stronger.

This is the time to make a final decision on many items pushed to the background. Old high cost capacity which is overdue for replacement will never do you any good. From here on out, competition will be tougher than ever. Plants with the lowest unit cost—and wide awake salesmen—are a threat to you.

This is also the time to take a close look at your location. Is it right for your best market? If it is right, what is your community doing for you? High sounding propaganda from newer areas is being offset in some cases by older locations doing something to hold manufacturers they always took for granted.

Watch out for phony tax savings that dangle before you. They are not always what they seem to be. Exempted or reduced taxes for a specific period in a questionable area won't help you when the "period" is over.

What about those costly studies you made on paper work, high clerical expense, and lost motion jobs? When business picks up there is a tendency to forget these "plans." In light of what is ahead —inflation, higher costs, and rugged competition —restudy the recommendations. Now is the time to put them into effect.

How about your coddling policies? Are there too many coffee breaks; too much music and too much social center atmosphere instead of concentrating on getting work done? Proven industrial relations aids are worth the price. But doing things just to keep up with the industrial Joneses may be too costly.

Have you forgotten that there are real merit rewards? Do you standardize on everyone whether he is worth his "incentive" or not? That may be well for the majority, but you need something better for your potential managers. There is no substitute for a raise in pay when it is indicated by outstanding and meritorious work.

Will you make time count? Isn't it time to do away with tinsel, high sounding do-dads, and fluff without fact? And while laying the groundwork for the lean and hungry look for new business, are you giving your middle management its proper chance to learn—from experience?

Tom Campbell

Editor-in-Chief

Just saved: 61 separate drilling operations —and not a single tolerance needs checking

Dimensions and placement of everyone of the 63 holes in this Cleaver Brooks boiler door must be right on the nose. Tolerances of the dished stamping—plus or minus 1/16" on both the 60" diameter and flatness across the flange—must be held even *after* the holes are pierced.

COMMERCIAL meets all of these exacting requirements. It designed and turned out the forming and piercing dies, forms the heavy stampings and gang pierces the holes. And it's the same story all the way with the 36" and 48" diameter dished boiler doors COMMERCIAL also manufactures for Cleaver Brooks.

Only the first gang-pierced boiler door requires a tolerance inspection. After that, as in the case of the 60" diameter stamped door, it's 63 holes at one crack —all with identical, near-perfect size and location tolerances every time. And at no time do the actual stampings go beyond the limits of their specified plus or minus 1/16" tolerances.

Here's the kind of accurate, cost-saving metal forming service you may want to consider the next time you're in the market for a medium or heavy stamping—long or short run. Just send along a blueprint or complete information on your requirements. Our engineers will cooperate fully. Address Commercial Shearing & Stamping Company, Department K-37, Youngstown 1, Ohio.

COMMERCIAL SHEARING & STAMPING

LETTERS FROM READERS

Inflation

Sir—Your August 28 editorial (By Any Other Name Inflation Is Still Bad) is to me one of your best. Inflation has and will affect all of us. We certainly hope it may be stopped in some way.

It certainly would be good if some of our high officials would look out for the good of the country and its people instead of looking for votes. I agree with you that those to whom we look for guidance had better take their responsibilities more seriously. — C. C. Spitzfaden, Purchasing Agent, The Tool Steel Gear and Pinion Co., Cincinnati.

Sir—I hope that those concerned with policymaking, both in and out of government, will read your editorial on inflation in the August 28 IRON AGE, and do something, but fast!

Your editorials contribute considerably in making The IRON AGE a valuable medium for our advertising.—E. W. Farmer, Adv. Mgr., Bay State Abrasive Products Co., Westboro, Mass.

Service Centers

Sir—It is pleasing to know that IRON AGE is now referring to steel warehouses as "steel service centers." We need to tell the public more about what our function is and our place in the economy. The term, "steel service centers" helps us in that endeavor and we appreciate your cooperation.—Pollard Turman, president, J. M. Tull Metal & Supply Co., Inc., Atlanta.

"Cheer up, boy. . . . Things are gonna boom. . . ."

Sir—As a member of the Executive Committee as well as the Public Relations Committee of the American Steel Warehouse Association, I wish to express my personal appreciation for the change which IRON AGE has made by using the term "steel service centers" instead of the old designation of "steel warehouses." — P. O. Grammer, president, Grammer, Dempsey & Hudson, Inc., Newark, N. J.

Direct Reduction

Sir—In The IRON AGE Newsfront Aug. 7 issue there appears a mention of a new direct reduction process.

We'll appreciate further information on the nature and extent of this process and, if possible, who is doing it.—J. A. Rassenfoss, Mgr., Mfg. Research Laboratory, American Steel Foundries.

▪ The source of this item is Professor Albert De Sy, Head, Metallurgical Department, University of Ghent, Ghent, Belgium. We are planning to run a technical feature article on this subject next week.

Embrittlement

Sir—Please send us two copies of New Technique Rids Plated Steel of Hydrogen Embrittlement (July 31 issue.)

This article is certainly appreciated. It is education like this, which makes your magazine so valuable. — R. E. Holman, Jr., Load-Holder, Cargo Stabilizing Devices, Chicago.

RED CIRCLE
Rolls
ALLOY-CHILLED
Hyde Park
RAMS
for all types of
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Hyde Park Rams are available in Chilled or Alloy Iron.
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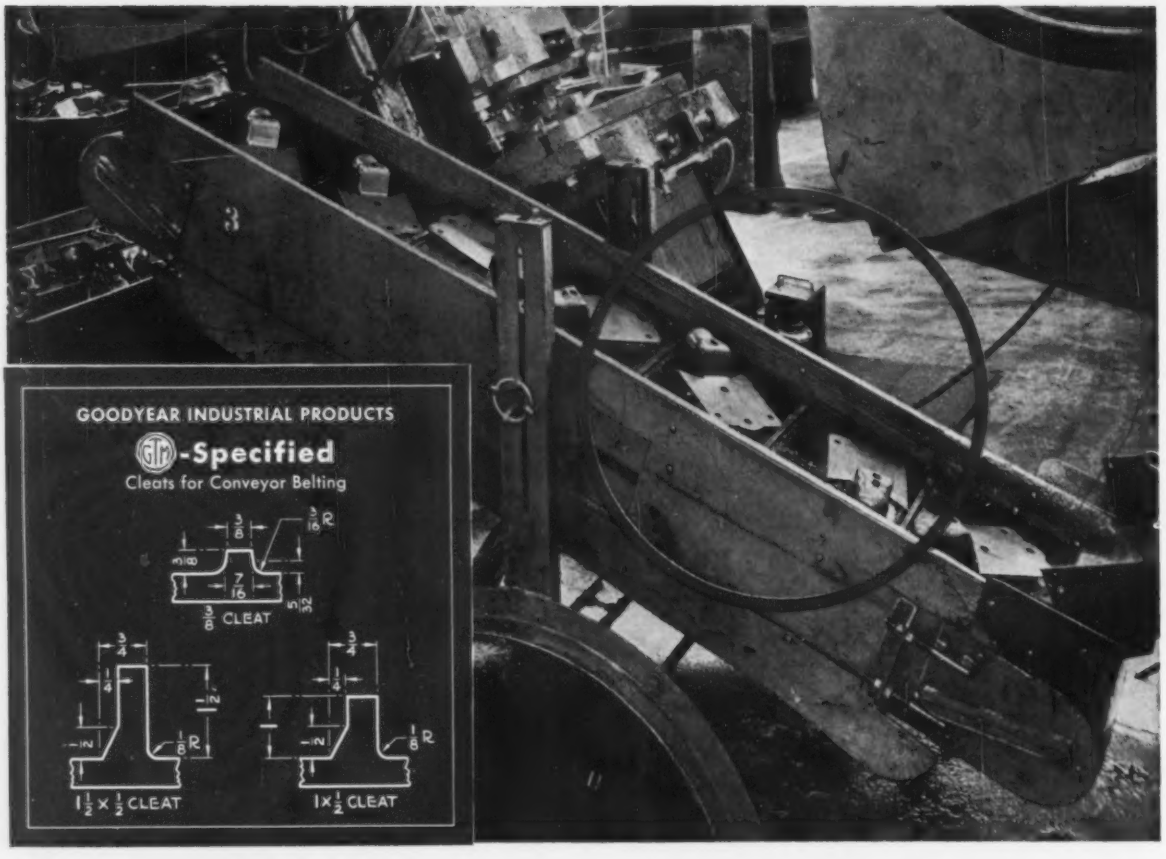


They're raising production—and lowering costs by ⅓

Portable conveyors—between production lines on different levels—were a "must" at this Midwestern automotive parts plant. But the specially constructed belts they used soon cut and flaked off. They became oil-soaked and accumulated dust—dirtying the parts. Worse still, they stretched—had to be taken up every 6 weeks. Even then, none lasted more than a year.

Then the G.T.M.—Goodyear Technical Man—recommended Style ORS Cleated Belts. They're made of rubber especially compounded for extreme resistance to oil, cutting and abrasion. And the tough, firm-gripping cleats are molded right into the rubber for durability.

The savings are impressive: The G.T.M.'s less-expensive belts eliminated the need for parts washing. And after 3 straight years of full service—*three times the life of competitive belts*—they're still going strong.

Like to have savings like these on your production lines? The fastest way to find out is to call the G.T.M. He'll be Johnny-on-the-spot if you contact your Goodyear Distributor—or write Goodyear, Industrial Products Division, Akron 16, Ohio.

• • •

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*

CONVEYOR BELTING BY

GOODYEAR

60th GOODYEAR ANNIVERSARY

THE GREATEST NAME IN RUBBER

What's Your Worry?

People are wasting time these days because they can't worry properly. That's the conclusion R. J. Pounds puts forth in the GMC Truck News.

He points out the danger when people spend time:

Worrying about the Russians—and get run over by a neighbor.

Worrying about radioactive fallout—and get poisoned spraying the flowers.

Worrying about the car not being greased—and then wrap it around a telephone pole.

Worrying about H-bombs—and blow their heads off lighting a stove.

Worrying about crashing in an airplane—and break a leg falling off a ladder.

Worrying about the kids running in front of cars—and then drag them across the street against the light.

How to Change Pace

The happy little men below are now found on a notice of rolling schedules mailed out by Atlantic Steel Co., Atlanta, Ga.

We've gotten the schedules for some time and recently noticed something new had been added. It was the little men. We asked Atlantic for permission to reproduce them and some word on how they originated.

Here's part of the answer from M. F. Moncrief, manager of the firm's advertising department: "The schedules have generally been reproduced on our standard letterhead, but we felt a change of pace was necessary. Hence the little men. We feel they illustrate the enthusiastic spirit of our workers and the speedy service we attempt to give.

"We believe these notices are a distinct service to our customers, helping them anticipate their steel needs and schedule operations."

Midget Markets

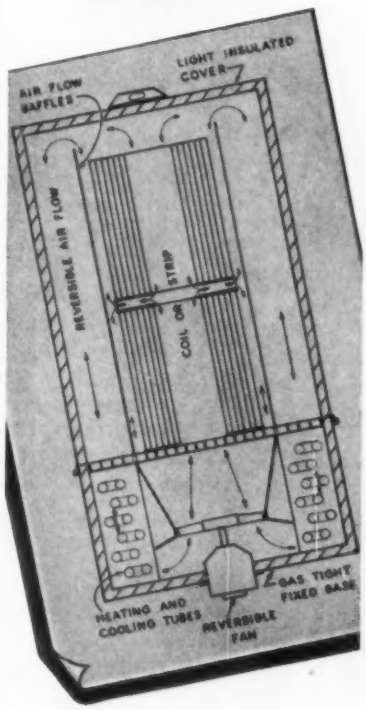
In this wide world there are many needs—not always large or vital—which metals conveniently fill. Here's one of them, with our thanks to the Electromet Review:

Corrosion due to heat, humidity, and sea water is rough on materials at Majuro, one of the many islands in the Marshall group. A missionary there reasoned that paper clips made of stainless steel would better withstand the attack of the elements.

So Techalloy Co., Rahns, Pa., supplied the stainless steel wire, forty-one thousandths of an inch in diameter. Noesting Pin Ticket Co., New York City, turned it into clips.

The result: paper clips which retain their shape after long use, are rust and corrosion resistant, and eliminate a potential source of infection.

CUT
NON-FERROUS
ANNEALING TIME
33%



R-S Single Stack* Annealing... Faster Heating, Automatic Airflow Reversal... Uniform Heating

Designed for faster heating and cooling with forced convection and automatic airflow reversal—allows absolute uniformity of heating with no spotty sections on coils.

Lightweight, insulated, one-piece cover. Permanent fuel-air connections. Annealing of copper, brass and bronze strip and wire accomplished in only ⅓ of time required for conventional annealing. Only one seal to maintain with one cover to handle. Factory assembled unit with true portability.

Write for details on strip and wire annealing.

R-S FURNACE CO., INC.
NORTH WALES, PA.

*Patent Pending

R-S FURNACES

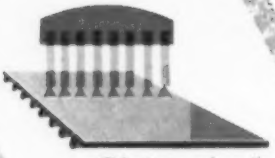
KAISER ENGINEERS

–has designed and built,

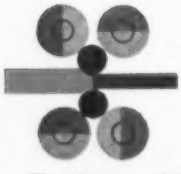
–is designing and building,

–will design and build...

Air pollution control and water treatment



Sinter plants



Rolling mills

By-products plants

Kaiser Engineers designs and builds every part of a steel mill. Been doing it for years. KE has the experience, and the ingenuity, to develop time-cutting, cost-saving new ways to build and operate. The result is a better plant, sooner, for less.

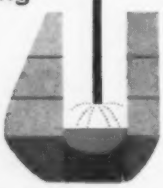
Experience, ingenuity—and a cost-conscious approach. This is what KE can apply to your steel plant expansion program right now. Call or write—today.

Pittsburgh, 330 Grant St., AT 1-7992
New York, 300 Park Ave., PL 9-1100
Oakland, 1924 Broadway, CR 1-2211

Open hearths

Ore beneficiation and handling

Pipe mills



L-D Process plants

Blast furnaces

KAISER ENGINEERS

KAISER ENGINEERS engineers-contractors
Contracting since 1914

Division of Henry J. Kaiser Company - Oakland 12, California - New York, Pittsburgh, Washington, D. C., Buenos Aires, Calcutta, Dusseldorf, Montreal, Rio de Janeiro, Sydney, Tokyo

COMING EXHIBITS

Iron & Steel Show — Sept. 23-26, Cleveland Public Auditorium, Cleveland. (Association of Iron & Steel Engineers, 1010 Empire Bldg., Pittsburgh 22, Pa.)

Western Tool Show — Sept. 29-Oct. 3, Shrine Exposition Hall, Los Angeles. (American Society of Tool Engineers, 10700 Puritan Ave., Detroit 38.)

Packaging & Materials Handling Show—Oct. 14-16, Coliseum, Chicago. (SIPMHE, 327 LaSalle St., Chicago 4.)

Metal Show — Oct. 27-31, Public Auditorium, Cleveland. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

Plastics Show—Nov. 17-21, International Amphitheater, Chicago. (The Society of the Plastics Industry, Inc., 250 Park Ave., New York 17.)

MEETINGS

SEPTEMBER

The Instrument Society of America —Annual instrument automation conference and exhibit, Sept. 15-19, Convention Hall, Philadelphia. Information: F. J. Tabery, exhibit manager, 3443 S. Hill St., Los Angeles 7, Calif.

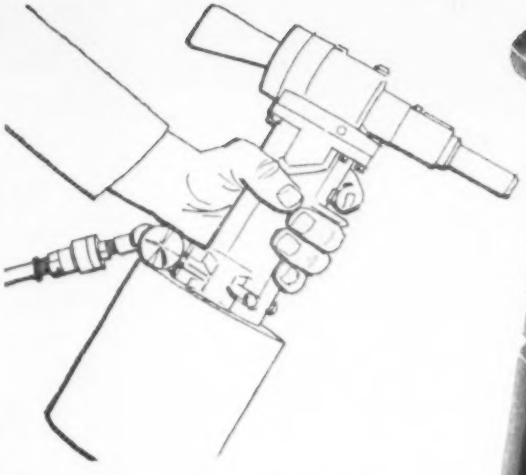
Electric Overhead Crane Institute —Membership meeting, Sept. 16, Warwick Hotel, Philadelphia. Society headquarters, One Thomas Circle, Washington 5, D. C.

The Malleable Founders Society—Semi-annual meeting, Sept. 19, Hotel Cleveland, Cleveland. Society headquarters, 1800 Union Commerce Bldg., Cleveland 14.

Steel Founders Society of America —Fall meeting, Sept. 22-23, The Homestead, Hot Springs, Va. Society headquarters, 606 Terminal Tower, Cleveland 13.

The Material Handling Institute, Inc.—Joint industry fall meetings—Sept. 22-24, The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, Suite 759, One Gateway Center, Pittsburgh 22.

(Continued on P. 16)



Vibration-proof fastening for transportation equipment by Townsend

Townsend blind rivets* and Townsend Lockbolts† provide economical, vibration-proof fastening for all types of transportation equipment. Both in manufacture and repair, Townsend transportation fasteners are easy and fast to install—giving high worker productivity. Once installed, they make a tight joint which will resist the loosening effects of vibration indefinitely—lowering maintenance costs for your customers.

For information on how Townsend blind rivets and lockbolts can give you better fastening for less money, consult your Townsend representative or write for literature to Townsend Company, P. O. Box 237-B, New Brighton, Pa.

*Patents issued and pending
†Licensed under Huck patents RE22,792; 2,114,493; 2,527,307; 2,531,048; 2,531,049 and 2,754,703

The Fastening Authority

Townsend

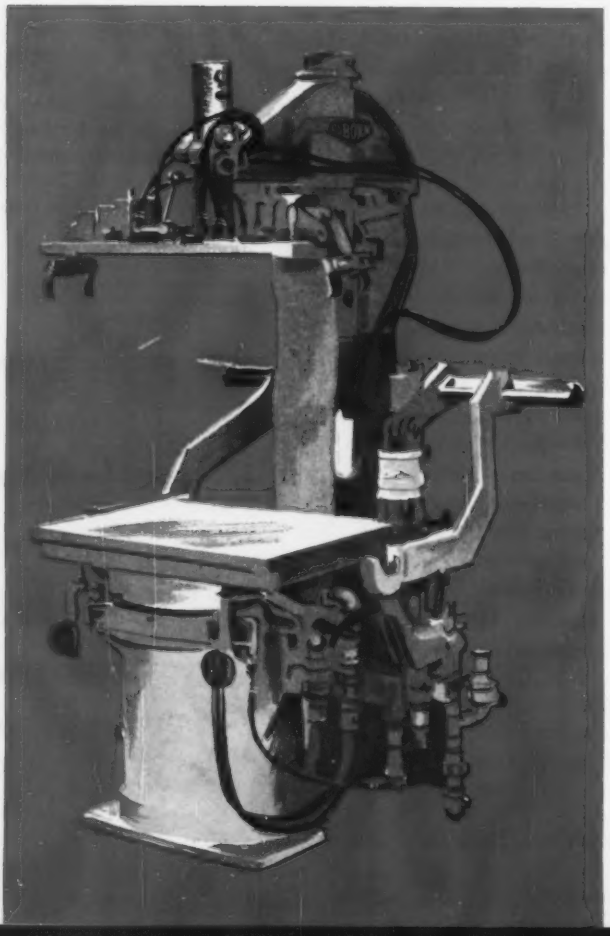
COMPANY • ESTABLISHED 1816

Sales Offices in Principal Cities

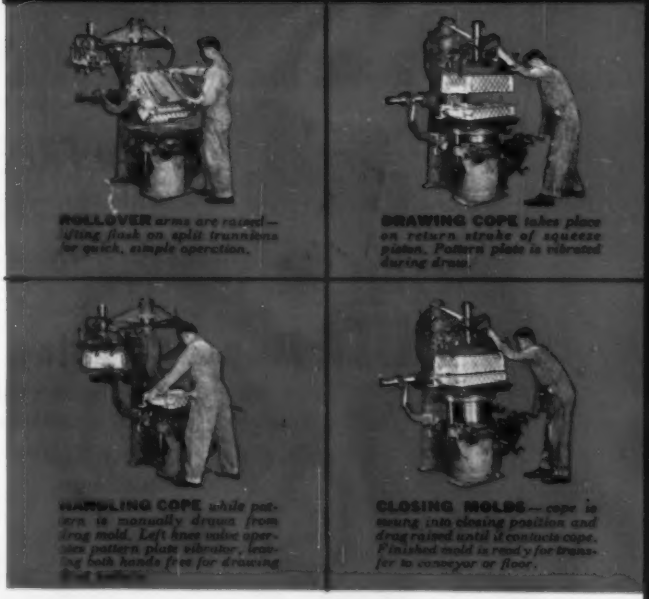
Here's how one man . . .

. . . one OSBORN ROTA-LIFT®. . . .

can turn your
large match-plates
into profits!



Here's how the OSBORN ROTA-LIFT mechanizes match-plate molding



ROLLOVER *arms are raised—lifting flask on split trunnions for quick, simple operation.*

DRAWING COPE *takes place on return stroke of squeeze piston. Pattern plate is vibrated during draw.*

HANDLING COPE *while pattern is manually drawn from drag mold. Left knee valve operates pattern plate vibrator, leaving both hands free for drawing.*

CLOSING MOLDS—*cope is swung into closing position and drag raised until it contacts cope. Finished mold is ready for transfer to conveyor or floor.*

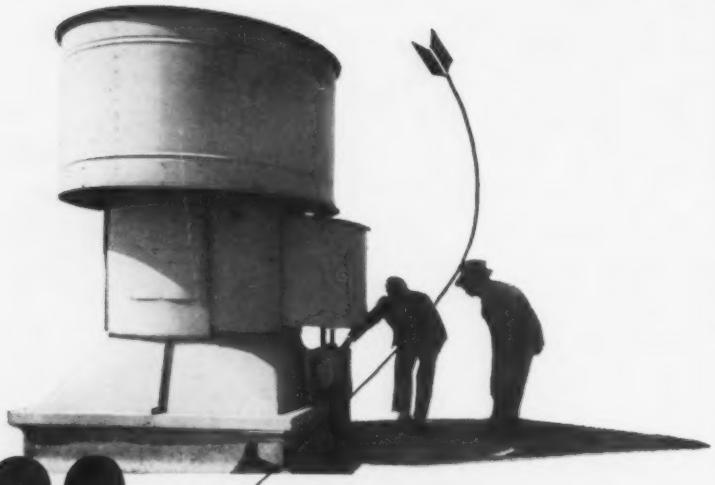
MOLDS formerly considered too large for match-plate molding can be handled on the Osborn Rota-Lift. With the Rota-Lift one man performs *all* the operations that once required two men. But that's not all. Molds are of uniform quality... and there's less operator fatigue to assure more production per man-hour . . . lower cost per mold.

These unique advantages make the Osborn Rota-Lift a profitable investment for any jobbing or semi-production foundry. For full details, write *The Osborn Manufacturing Company, 5401 Hamilton Avenue, Cleveland 14, Ohio.*

Specify OSBORN® leader in mechanization for the foundry

MEMBER FEMA

MOLDING MACHINES • CORE BLOWERS • SHELL MOLDING MACHINES • BRUSHING MACHINES • INDUSTRIAL BRUSHES



36 Burt Free Exhaust Fan Ventilators Rout Heat and Fumes Fast in TRUE TEMPER'S New Saybrook Forge Plant

Designed and built by The Austin Company, Cleveland, Ohio, True Temper's multi-million-dollar Saybrook Forge Plant uses eighteen 54" and eighteen 42" Burt Free Exhaust Fan ventilators to provide a two-minute air change dependably and economically . . . The entire discharge in Burt Free Exhaust Fan ventilators is vertically upward, with no internal baffles to impede the full flow of air. This highly efficient design provides power capacities of 41,700 cfm for each 54" ventilator and 24,000 cfm for each 42" unit . . . Fresh air at low cost is available for your plants, too, from Burt's complete line. There's a type and size for every ventilating need.

Send for FREE Data Book!

Write for Burt Data Book SPV-101G. It supplies quick data on Burt's complete line of modern Roof Ventilators.

FAN & GRAVITY VENTILATORS | LOUVERS | SHEET METAL SPECIALTIES

The Burt Manufacturing Company

920 S. High Street Akron 11, Ohio

MEMBER AIR MOVING & CONDITIONING ASSOCIATION, INC.

EXHIBITS, MEETINGS

(Continued from P. 13)

Air Moving & Conditioning Assn., Inc.—Annual meeting, Sept. 22-25, The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, 2159 Guardian Bldg., Detroit 26.

Porcelain Enamel Institute — Annual meeting, Sept. 25-27, The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, 1145 19th St., N. W., Washington, D. C.

The Electrochemical Society, Inc.—Semi-annual meeting, Sept. 28-30 and Oct. 1-2, Chateau Laurier, Ottawa, Canada. Society headquarters, 1860 Broadway, N. Y.

Pressed Metal Institute — Annual meeting, Sept. 28-Oct. 2, The Cloisters, Sea Island, Ga. Society headquarters, 3673 Lee Rd., Cleveland 20.

OCTOBER

National Assn. of Sheet Metal Distributors—Fall meeting, Oct. 5-8, Marlborough Blenheim Hotel, Atlantic City. Society headquarters, 1900 Arch St., Philadelphia.

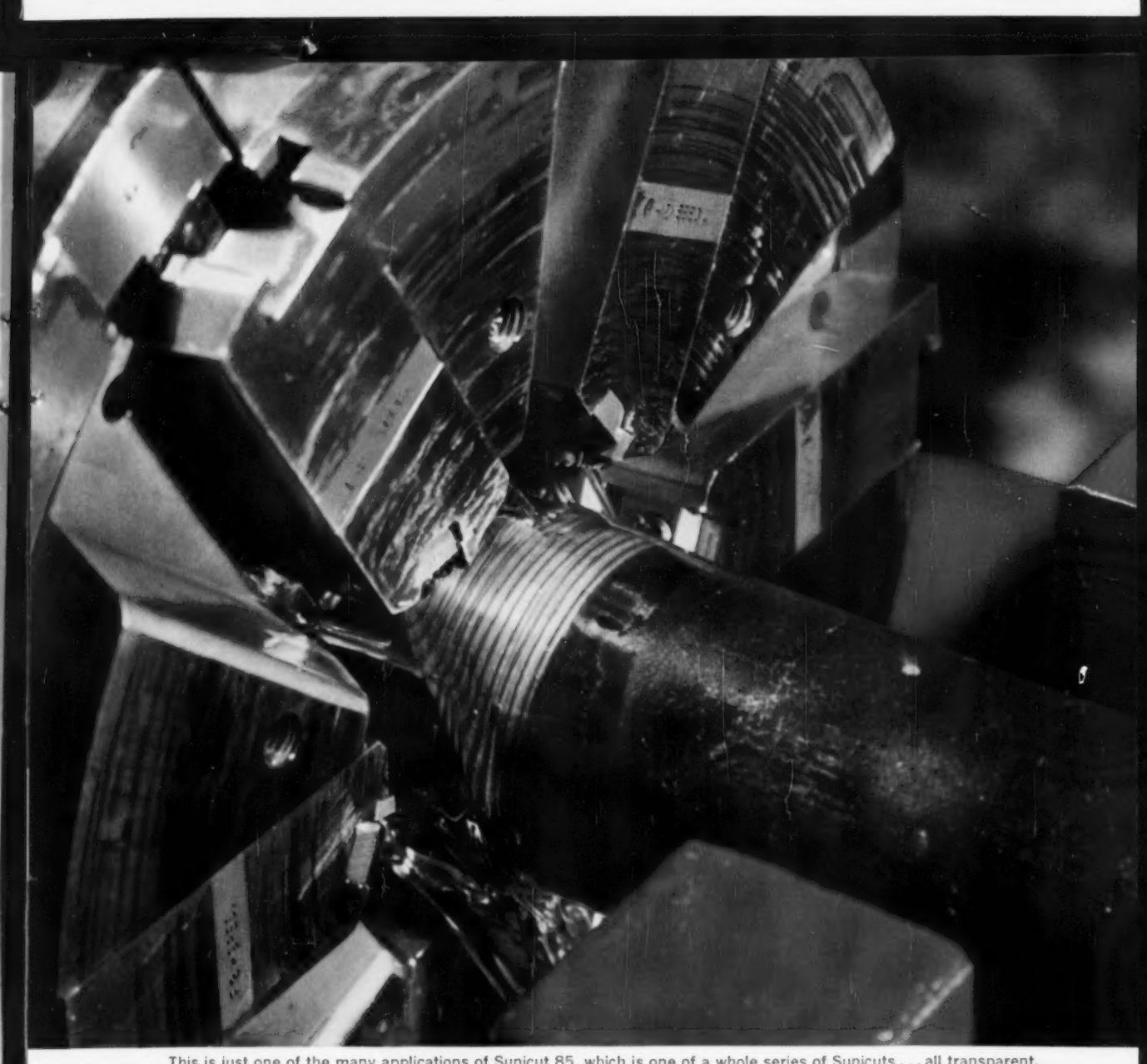
Truck Body & Equipment Assn., Inc.—Annual convention and exhibit, Oct. 6-8, Ambassador Hotel, Atlantic City. Society headquarters, 1616 K St., N. W., Washington D. C.

Gray Iron Founders' Society, Inc.—National annual meeting, Oct. 8-10, Sheraton-Park Hotel, Washington. Society headquarters, 930 National City-E 6th Bldg., Cleveland.

The Wire Assn.—Annual convention, Oct. 13-16, Chalfonte-Haddon Hall, Atlantic City. Society headquarters, 543 Main St., Stamford, Conn.

American Machine Tool Distributors' Assn.—Annual meeting, Oct. 15-17, Sheraton Plaza, Boston. Society headquarters, 1900 Arch St., Philadelphia.

Rail Steel Bar Assn.—Semi-annual meeting, Oct. 20-22, Blackstone Hotel, Chicago. Society headquarters, 38 S. Dearborn St., Chicago.



This is just one of the many applications of Sunicut 85, which is one of a whole series of Sunicuts . . . all transparent.

SUNICUT 85 is a heavy-duty cutting oil that lets you see what you're doing

Transparent, fast-draining Sunicut® 85 leaves the workpiece clear for inspection as you go.

Especially designed for use on high-alloy steels, Sunicut 85 is ideal for heavy-duty work on automatic screw machines and production form grinders. It's a natural for pipe threading and similar heavy-duty operations requiring frequent and close inspection.

Easy pumping, fast metal-wetting, and excellent extreme-pressure lubrication are other advantages of Sunicut that lead to production economy for you.

Ask your Sunoco representative about saving money with Sunicut, or write to Dept. I-10.

Industrial Products Department

SUN OIL COMPANY, Phila. 3, Pa.

SUNOCO

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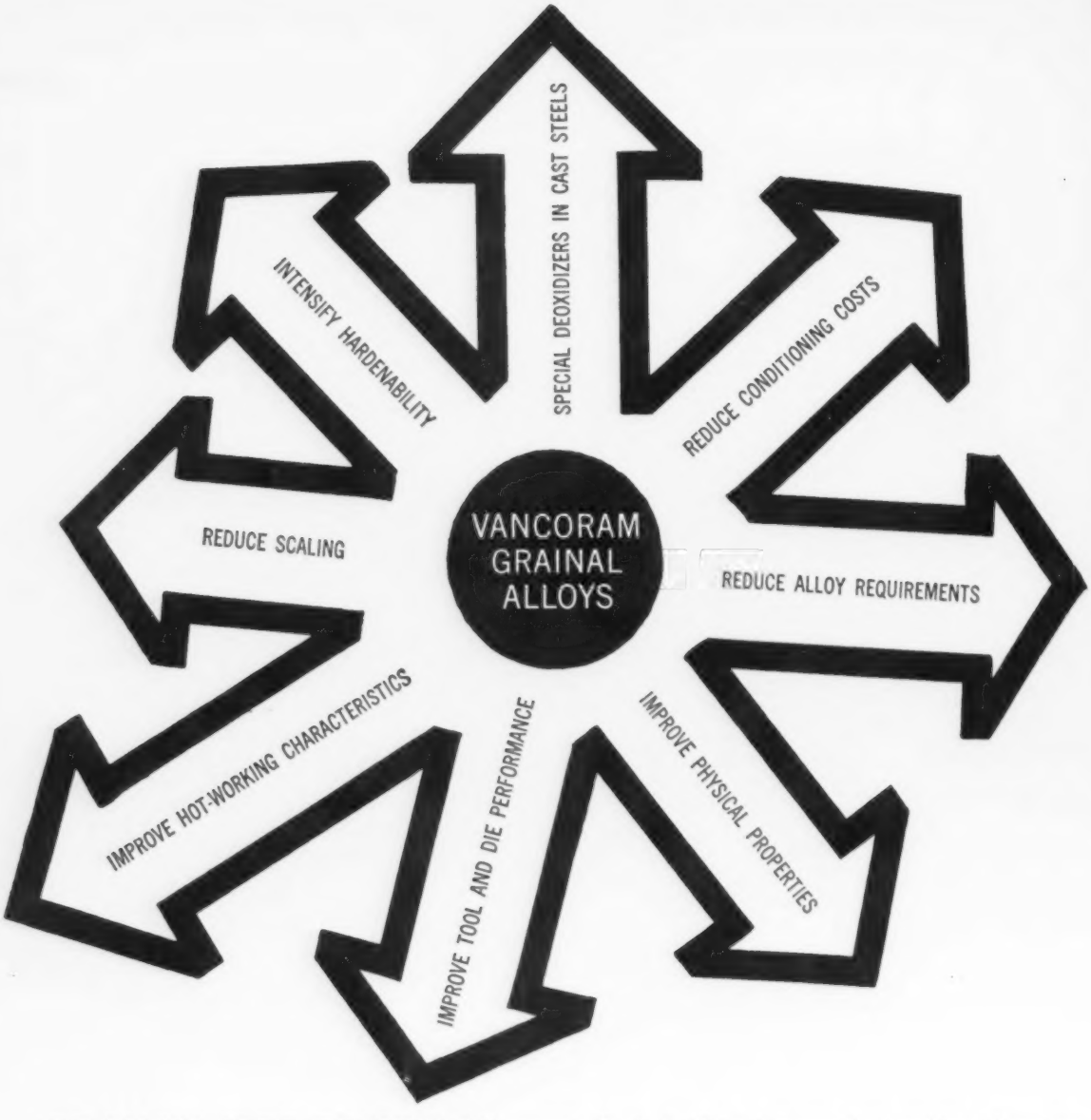
In Canada: Sun Oil Company Limited, Toronto and Montreal



. . . SO MANY JOBS SO WELL! Vancoram Grainal Alloys improve hot-working characteristics and reduce conditioning costs and rejections in stainless and heat-resisting steels. They intensify hardenability, reduce scaling. They improve tool and die performance in cold upsetting, blanking, punching, pressing, forming. Grainal Alloys lower steel cost by reducing alloy requirements, and improve physical properties of high-strength cast steels. And they are used as special deoxidizers in cast steels. What other alloy can do so many jobs so well?

Learn more about the special versatility of Vancoram Grainal from the booklet, "Grainal and Its Use." Write or phone your nearest VCA District Office for your free copy.

Producers of alloys, metals and chemicals

VANADIUM CORPORATION OF AMERICA

420 Lexington Avenue, New York 17, N. Y. • Chicago • Cleveland • Detroit • Pittsburgh

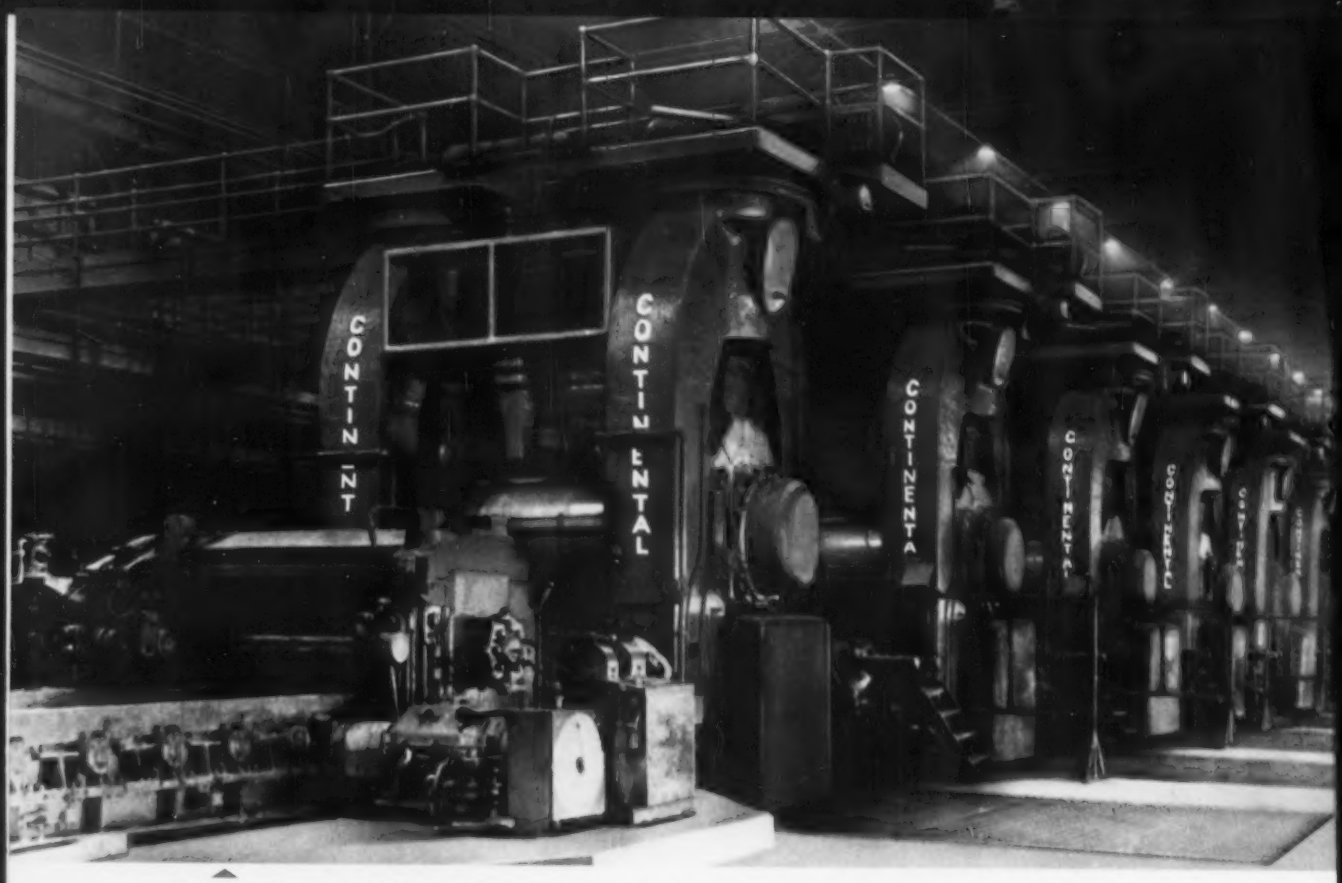
40 x 96 inch, 2 high blooming mill at the Fairless Works of the United States Steel Corporation.

from Steel Making to Steel Finishing BLAW-KNOX Equipment Serves the Steel Industry

Blaw-Knox custom-designed and built products for the steel industry range from ore buckets to complete rolling mills.

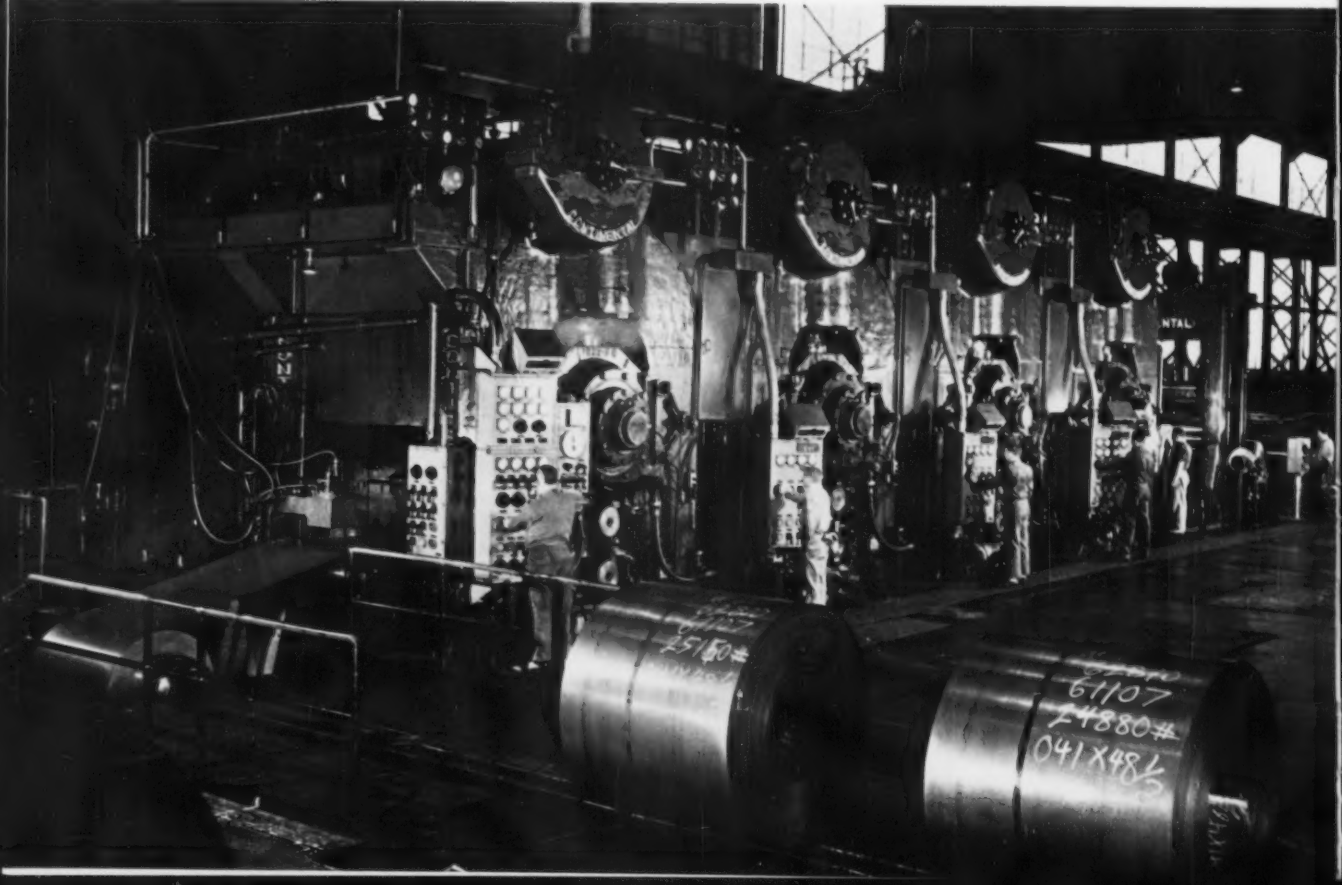
Throughout the steel industry, the Blaw-Knox mark has come to mean exceptional service and the highest standards of performance.

The engineering force and plant capacity behind Blaw-Knox products continues to serve the steel industry in meeting its ever increasing service requirements.



80 inch continuous hot strip mill installed at the Gary Works of the United States Steel Corporation.

60 inch, 4 stand tandem cold strip mill at the Gibraltar plant of McLouth Steel Corporation.



Roughing stand of Merchant Mill installed at Pollak Steel Company, Marion, Ohio.

Medart 2 and 2 straighteners on the drawing line of American Steel and Wire's Cleveland Plant.

BLAW-KNOX

Alloy Castings supplied by the National Alloy Division are carrying plate up to 45 feet long, 13 feet wide and two inches thick through a Drever heat treating furnace.

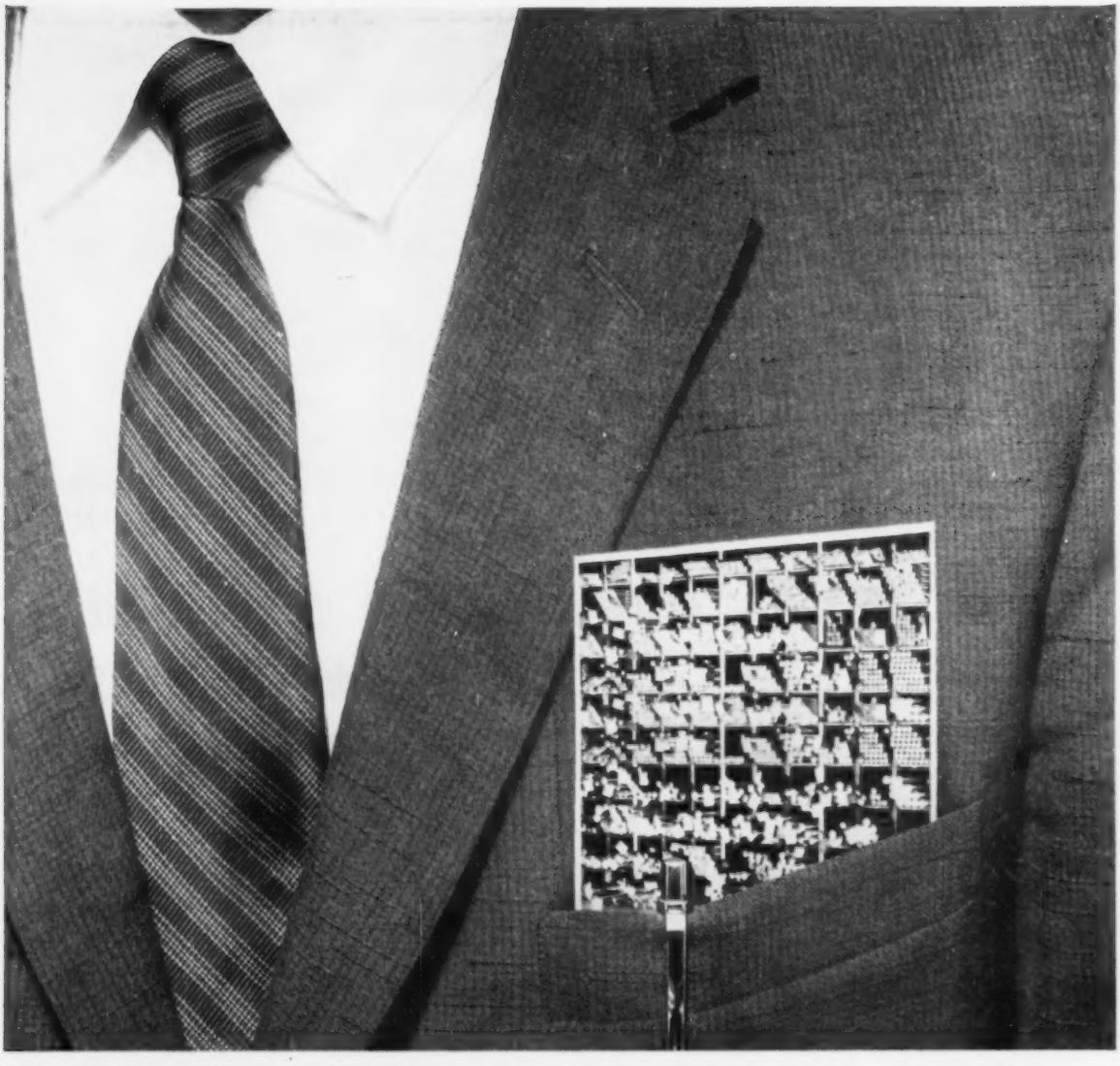
Mechanized open hearth accessories such as the ladle additions feeder provide safer more efficient open hearth operations. In addition, Blaw-Knox supplies water-cooled doors, frames and valves.

This serrated Blast Furnace Bell is part of a wide range of castings made in Blaw-Knox Foundries. Blaw-Knox also supplies iron, alloy iron and steel rolls.

BLAW-KNOX

BLAW-KNOX COMPANY

Blaw-Knox Building • 300 Sixth Avenue
Pittsburgh 22, Pennsylvania



it's like having a stainless steel warehouse in your pocket . . .

And it doesn't even take that much storage space. That's why so many plants are now saving money and labor by using the dependable stock racks of local Carpenter warehouses. There's a built-in bonus . . . it's Carpenter technical service, always on call with data and on-the-job help. The quality of Carpenter stainless has been speaking for itself for many years in thousands of plants. Your local Carpenter warehouse is the answer to inventory problems with stainless . . . call today. The Carpenter Steel Company, Reading, Pa.

Carpenter STEEL

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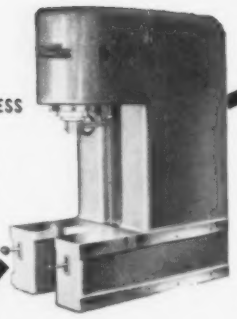
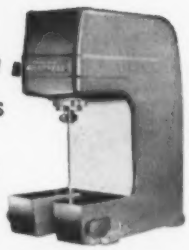
Baltimore, Md.
Bridgeport, Conn.
Buffalo, N. Y.
Cambridge, Mass.
Cincinnati, Ohio
Cleveland, Ohio
Dayton, Ohio
Detroit, Mich.
Hartford, Conn.
Houston, Texas
Indianapolis, Ind.
Los Angeles, Calif.
Melrose Park, Ill. (Chicago Area)
Milwaukee, Wis.
Mountainside, N. J.
Philadelphia, Pa.
Providence, R. I.
St. Louis, Mo.
San Francisco, Calif.
Toledo, Ohio
Woodside, L. I., N. Y.
Worcester, Mass.
York, Pa.

2 to 8 TON CAPACITY MULTIPRESS
Series F Bench model
- 18" daylight—12" stroke
- Closing speeds up to 1450 ipm
- Pressing speeds up to 570 ipm
- Return speeds up to 920 ipm



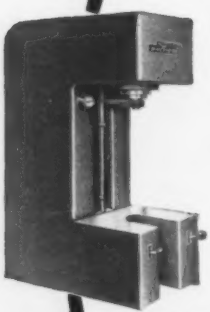
1-TON CAPACITY MULTIPRESS
Series A Bench model
- 8" daylight—3" stroke
- Operating cycles per minute (based on 1" stroke)—150



Money Saving Methods

FOR ASSEMBLING - TRIMMING - BROACHING - PUNCHING MARKING - BLANKING - DRAWING AND FORMING

Pick the press that suits your job best ...DENISON HydrOILic *MULTIPRESS* ...a thousand money-saving press combinations



5 and 10 TON CAPACITY MULTIPRESS
Series G Bench model
- 24" daylight—12" stroke
- Closing speeds up to 760 ipm
- Pressing speeds up to 230 ipm
- Return speeds up to 330 ipm

Here's the most versatile line of presses today... a range of sizes and models that lets you choose the best combination for your work!

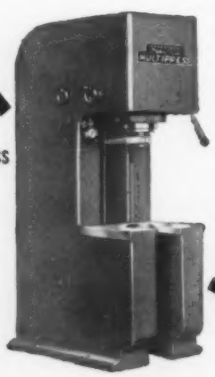
With Multipress, production is faster... quality more uniform... methods simpler—because fast, smooth hydraulic ram action duplicates identical pressure on every stroke. Touch control, vibratory ram action, and hydraulic interlock are available.

Pick from 10 frame sizes—1 to 75 ton capacity—with throat depths and daylight openings to suit your needs. Ram speeds up to 1300 inches-per-minute. Manual, servo or automatic controls on most models.

Send for catalog and specification sheets. Use attached form or write:

DENISON ENGINEERING DIVISION
American Brake Shoe Co.
1242 Dublin Road, Columbus 16, Ohio

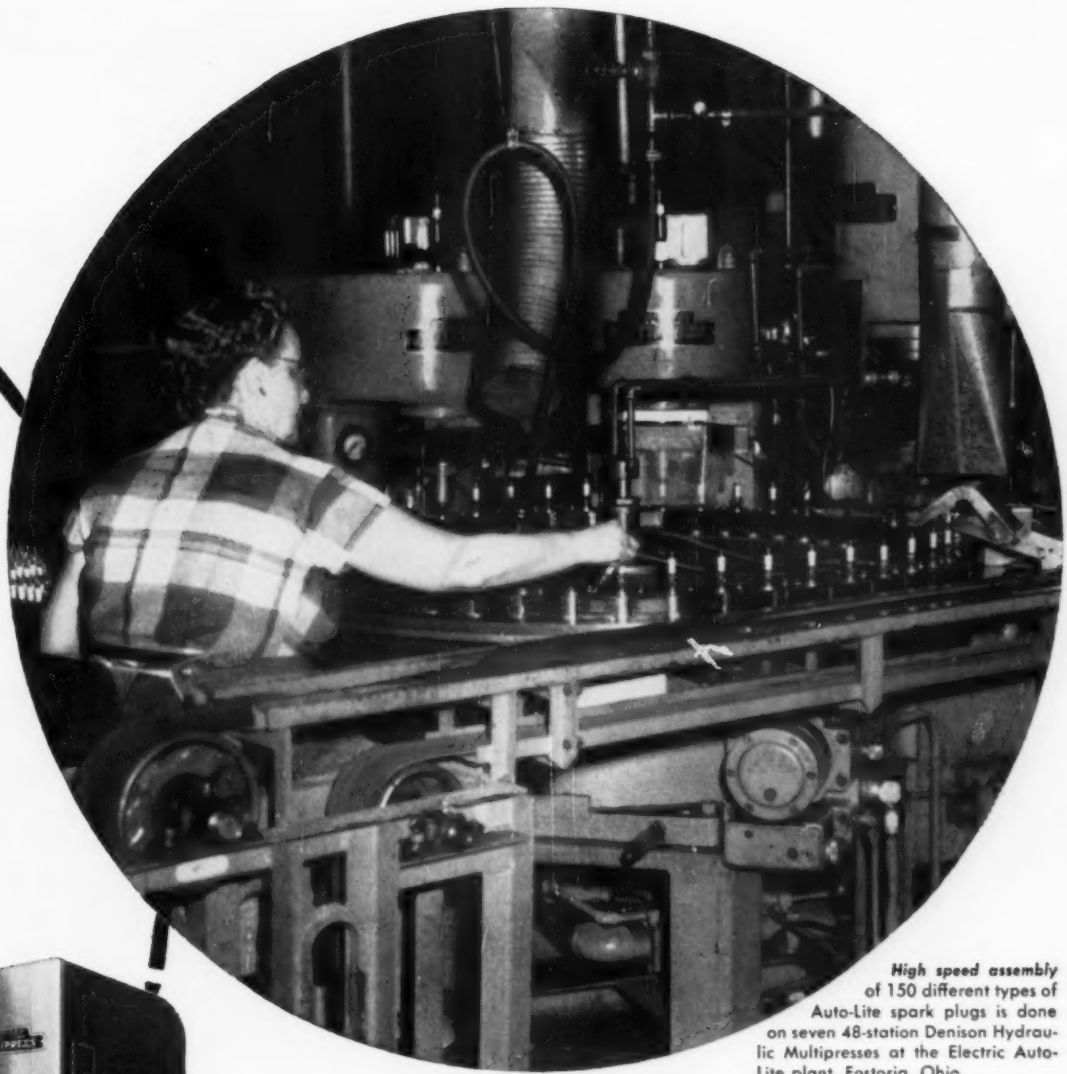
5 to 15 TON CAPACITY MULTIPRESS
Series H Floor model
- 23" daylight—12" stroke
- Closing speeds up to 820 ipm
- Pressing speeds up to 280 ipm
- Return speeds up to 500 ipm



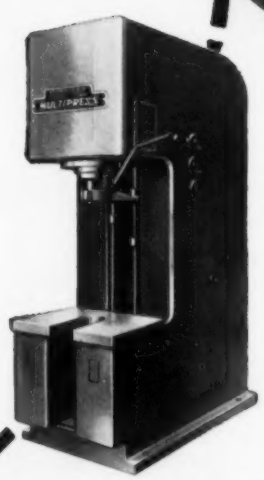
25-TON CAPACITY MULTIPRESS
Series K Floor model
- 24" daylight—15" stroke
- Closing speeds up to 530 ipm
- Pressing speeds up to 250 ipm
- Return speeds up to 470 ipm

35-TON CAPACITY MULTIPRESS
Series L Floor model
- 24" daylight—15" stroke
- Closing speeds up to 530 ipm
- Pressing speeds up to 250 ipm
- Return speeds up to 470 ipm

50-TON CAPACITY MULTIPRESS
Series N Floor model
- 24" daylight—15" stroke
- Closing speeds up to 290 ipm
- Pressing speeds up to 145 ipm
- Return speeds up to 290 ipm



High speed assembly of 150 different types of Auto-Lite spark plugs is done on seven 48-station Denison Hydraulic Multipresses at the Electric Auto-Lite plant, Fostoria, Ohio.



75-TON CAPACITY MULTIPRESS

Series Q Floor model

- 30" daylight—15" stroke
- Closing speeds up to 210 ipm
- Pressing speeds up to 110 ipm
- Return speeds up to 220 ipm

MAIL THIS FORM TODAY!

DENISON ENGINEERING DIVISION
American Brake Shoe Co.
1242 Dublin Road, Columbus 16, Ohio

Yes, please send me — at no cost or obligation — more information about the Denison Hydraulic Multipress applications checked below:

Type of Operation	☐ Assembling	Type of Material	☐ Steel
	☐ Marking		☐ Brass
	☐ Punching		☐ Aluminum
	☐ Trimming		☐ Plastic
	☐ Broaching		☐ Glass

Please have a salesman call ☐

Company Name _____

Address _____

City _____ *Zone* _____ *State* _____

Your Name _____

Position _____

HOW CAN THE MULTIPRESS HELP YOU?

Use this handy form to get more information

DENISON HydrOILics

HYDRAULIC PRESSES • PUMPS • MOTORS • CONTROLS

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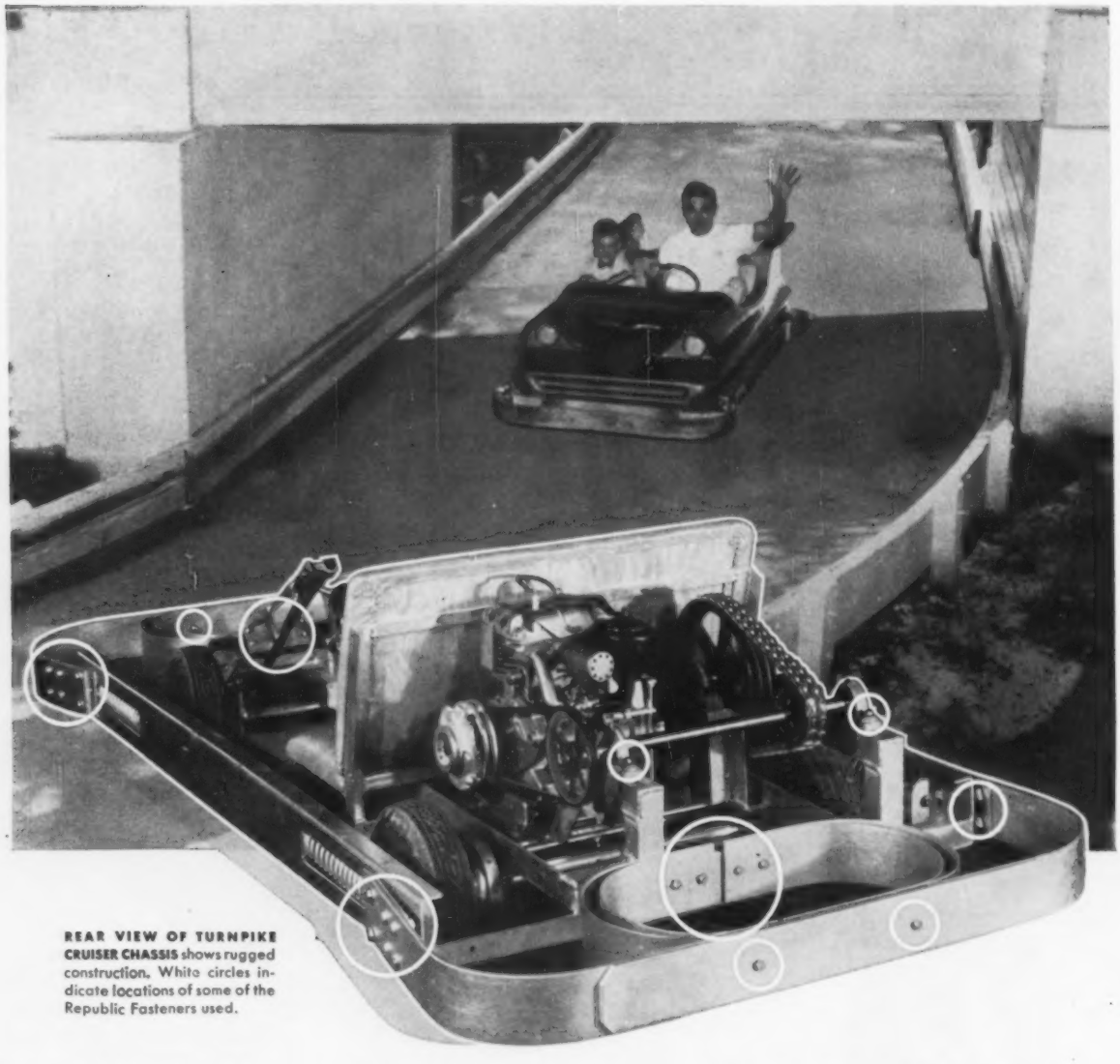


REAR VIEW OF TURNPIKE CRUISER CHASSIS shows rugged construction. White circles indicate locations of some of the Republic Fasteners used.

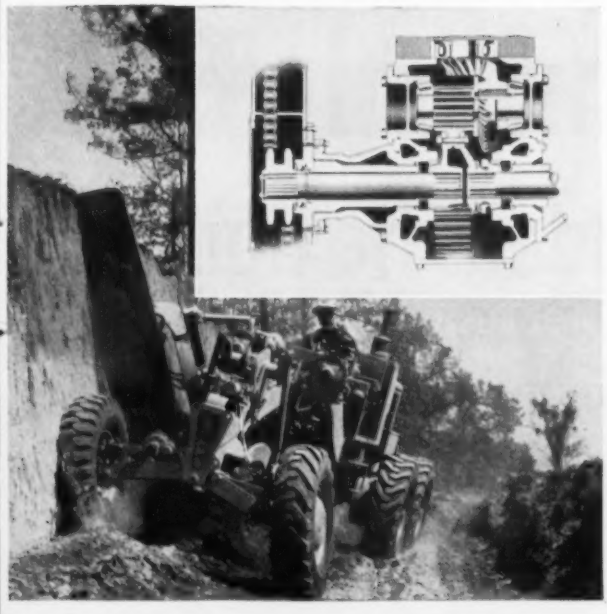
Republic Fasteners Underwrite Safety...Minimize Maintenance

IN STRECO TURNPIKE CRUISERS

Amusement park operators insist on safe, efficient equipment, designed for rugged service with a minimum of maintenance. That's why Streifthau Manufacturing Company, Middletown, Ohio, builders of amusement devices for more than 35 years, leave no detail to chance in producing equipment to meet maximum safety and minimum maintenance demands. These are the reasons why Republic Bolts, Nuts, and Cap Screws are used to fasten critical assemblies in the new Streco Turnpike Cruisers. Full-formed heads and clean, accurate threads make assembly and disassembly easy. And, when fully torqued, danger of fatigue failure is virtually eliminated.

In the production of fastener products, Republic processing goes far beyond simply meeting industry standards. Republic provides top quality through closely controlled, integrated production from mining and blending of ores to final inspection of finished fasteners. Exhaustive mechanical and metallurgical tests are your assurance of extra value in Republic Fasteners. Yet they cost no more than ordinary brands.

For complete information on the 20,000 standard and 8,000 special types and sizes of Republic Fasteners available, contact your nearest Republic representative or distributor. Or mail coupon.



TOUGH, STRONG REPUBLIC ALLOY STEEL is used in this motor grader, built by Adams Division, LeTourneau Westinghouse Company, to withstand fatigue, torque, and high impact loads. The grader's full-floating, two-section drive axle is made of Republic Hot Rolled 4340 Alloy Steel, heat treated. Day-in, day-out punishment under all operating conditions causes no permanent set. For data on Republic's complete line of alloy steels, mail coupon today.

REPUBLIC CHATEAUGAY PIG IRON adds strength, wear-resistance, excellent machinability to ductile iron cast parts in the Fitchburg Chipper. This machine, made by Fitchburg Engineering Corporation, Fitchburg, Mass., provides on-the-spot disposal of wood wastes. Chateaugay is the ideal base metal for ductile iron castings because of its high total carbon content and unusually low phosphorus, silicon, and manganese content. Uniform distribution of chemical elements in Chateaugay assists in producing a dense grain structure which results in excellent wear-resistance and economical machining. Republic Pig Iron Metallurgists will give you all the facts on Chateaugay. Mail the coupon today.

REPUBLIC MATERIALS HANDLING SPECIALISTS engineered these steel boxes to the exact requirements of the Kropp Forge Company, Chicago, Illinois. Special features include corrugated construction for extra strength, a smooth channel around the top to eliminate dangerous sharp edges, four-way fork channels to simplify handling, and stacking brackets welded to top corners to permit tiering to any practical height. As a result, these boxes save time, space, and money in handling and shipping operations. New materials handling ideas from Republic may help you gain similar advantages. Send coupon for facts.

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World's Widest Range of Standard Steels and Steel Products

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Please send more information on:

☐ Fastener Products ☐ Chateaugay Pig Iron
☐ Alloy Steel ☐ Materials Handling Equipment

Name_____ Title_____

Company_____

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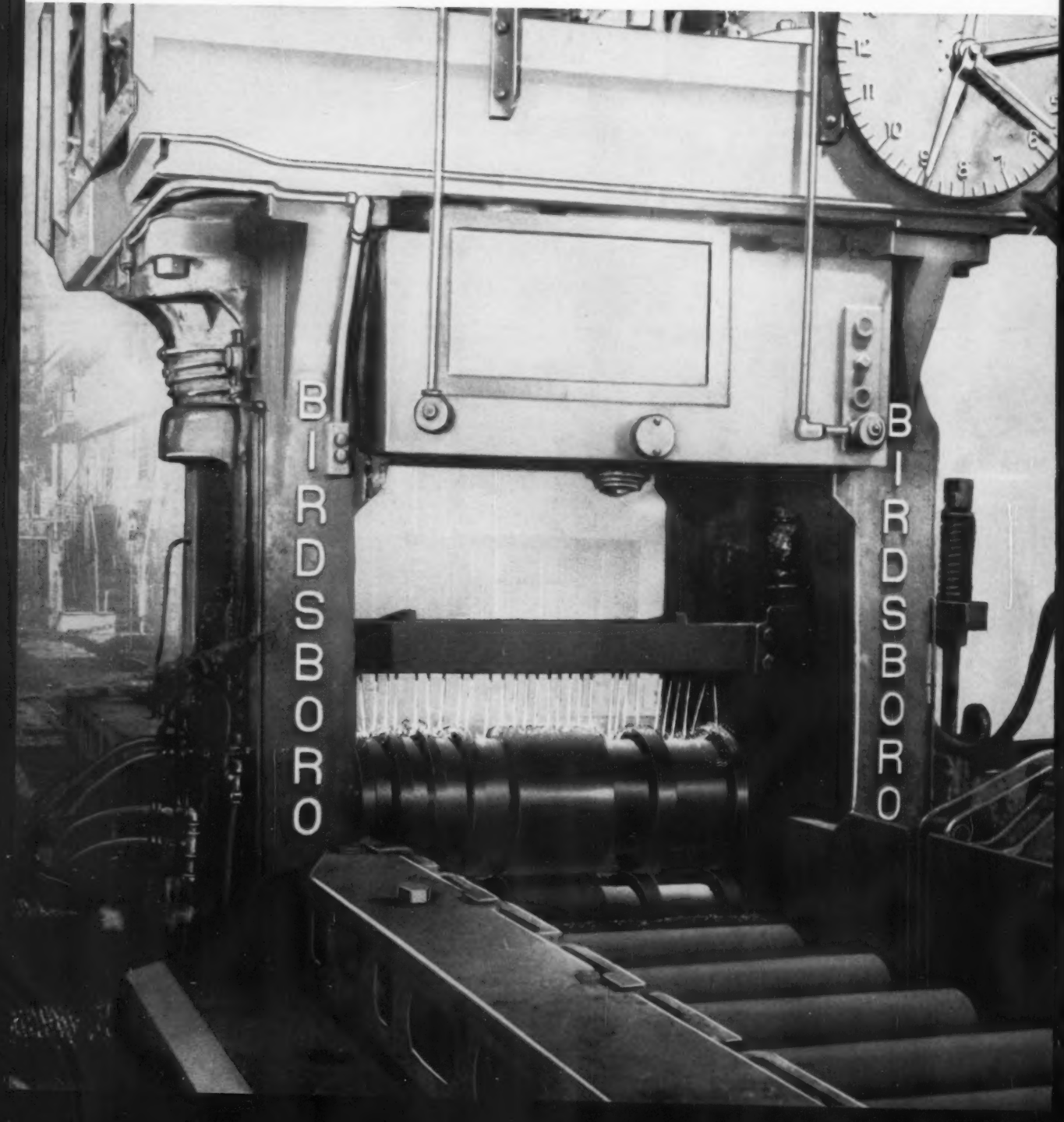
City_____ Zone_____ State_____

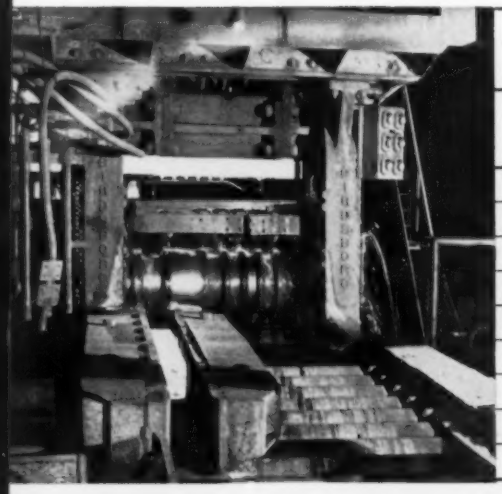
BIRDSBORO

give users added flexibility,



2-High Reversing Mills...

new profit potential



Check These Applications of BIRDSBORO 2-High Reversing Mills in Operation:

Size of mills	Primary blooming & slabbing	Secondary billet & slabbing	Structural roughing	Strip & skelp roughing	Merchant bar & rod roughing	Tube & extrusion Rough finishing
36"	✓	✓				
35"	✓					
34"		✓				✓
32"	✓	✓	✓			
28"					✓	
26'	✓	✓		✓	✓	✓
22"	✓					✓
20"	✓			✓	✓	
18"	✓					

● Ranging in size from 36" down to 18", these mills are improving production records in plants in the United States, Canada and South America. Almost every important name in the steel industry is listed among the users of Birdsboro mills.

Among the many features is VARIABLE SPEED, an inherent characteristic of the 2-high reversing mill. Here is why it is important:

1. spread may be controlled by varying the rolling speed.
2. difficulty in entering hard or slippery grades can be overcome by entering at slow speeds.
3. production can be maximized by taking initial passes at low speed, where entry is difficult, and speeding up on the final long passes.
4. slow speeds can be used to avoid rupturing the surface of tender grade ingots, until sufficient work has been done to permit faster rolling.

This comment about a Birdsboro 2-high reversing mill appeared in a national engineering magazine:

"... I find it very difficult when talking about this two-high mill to keep my enthusiasm under control. I honestly think this is one of the finest pieces of equipment that it has ever been my pleasure to work with. It is so completely flexible."—Superintendent of one of the leading specialty steel mills in the Eastern U.S.

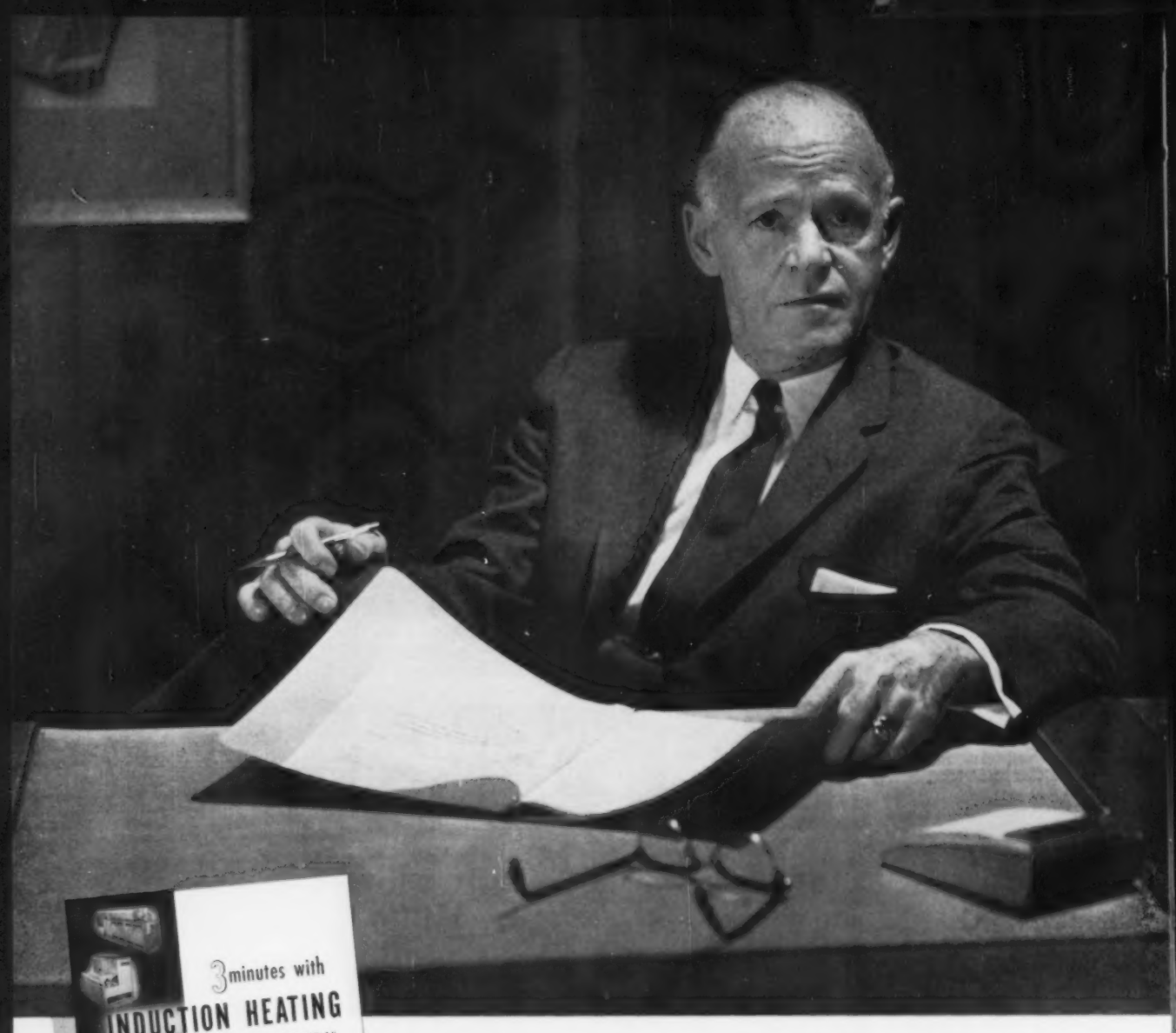
Your nearest Birdsboro mill machinery representative can give you a lot more of the details on our handling of special engineering problems in rolling steels. *Main Office, Engineering Department and Plant:* Birdsboro, Pa., *District Office:* Pittsburgh, Pa.

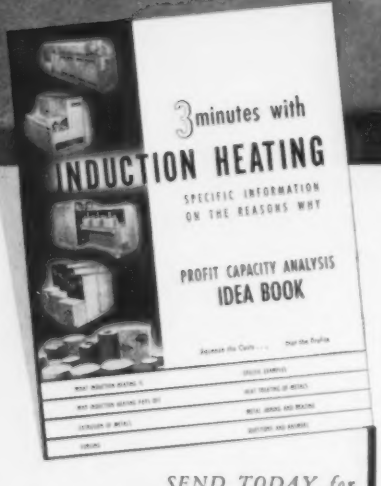
MM 70-58

BIRDSBORO

STEEL FOUNDRY AND MACHINE CO.

STEEL MILL MACHINERY • HYDRAULIC PRESSES • CRUSHING MACHINERY • SPECIAL MACHINERY • STEEL CASTINGS • Weldments "CAST-WELD" Design
ROLLS: Steel, Alloy Iron, Alloy Steel





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this new Induction Heating Booklet
MAGNETHERMIC'S
"Profit Capacity Analysis"

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HAUNTED BY THE PROFIT SQUEEZE...

MAGNETHERMIC'S Profit Capacity Analysis

. . . puts the squeeze on Costs . . . <u>not</u> Profits

If the pressure's on **you** for profits, put the "heat" on finding hidden production costs. MAGNETHERMIC Induction Heating installations are helping cost-conscious management leaders in many industries reduce costs, improve quality, and increase production through automation. Its adaptability in such operations as extruding, metal joining, forging and heat treating, to name a few, can be a major cost-cutting tool for you . . . a MAGNETHERMIC analysis will quickly find the possibilities.

MAGNETHERMIC offers skilled engineering to help custom fit its equipment to your applications. For a quick return on your investment, 5 minutes with this new booklet will show you how to put the "heat" where it belongs . . . on Costs . . . *not Profits.*

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Engineering Idea Leadership in Induction Heating
60 to 450,000 CYCLES

meet Jenny . . . the girl with the magic touch

HOW DO YOUR CLEANING COSTS STACK UP AGAINST JENNY'S ?

40-Ton Toggle Press	3 Hours
Automatic Screw Machine	5 Hours
Steel Mill Windows, per 30 panes	15 Minutes
Garage Floors, per 30 sq. ft.	10 Minutes
Machine Shop Floors, per 15 sq. ft.	15 Minutes
8-Ton Woodworking Machine	2 Hours
Overhead Crane Rail Girders, per 6 ft. section	15 Minutes
Pipe Threading Machine	30 Minutes
Small Drill Press	20 Minutes
Railroad Tank Car	2 Hours

Jenny® SERIES 1800 STEAM CLEANER

SERIES 1800 . . . one of 80 different models and types.

Maintenance superintendents report that Hypressure Jenny cuts cleaning time to one-tenth the time required by ordinary methods. Reduces down-time to a minimum. Regardless of how large or how small your cleaning job, there is a Hypressure Jenny to fit your requirements. In addition, the revolutionary Jenolizing process prevents rust after steam cleaning. Write for details now.

Please send me information on "How Industry Gets More Productive Hours" with Hypressure Jenny Steam Cleaners. 23

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HOMESTEAD VALVE MANUFACTURING COMPANY
Hypressure Jenny Division • Coraopolis, Pennsylvania

Why "COBEHN" Swung To Aluminum... To Lick *RISING COSTS*

Sales soaring, but profits sagging. That was the problem confronting Cobehn, Inc.

The company's portable spray cleaner is widely accepted for its ability to remove contaminants from small parts . . . even after assembly. With it, precision parts such as contact points, ball bearings and instrument components – even down to microminiature size – can be rendered microscopically clean in seconds.

However, rising material and fabricating costs were trimming profits – prompting a cost-saving study. Frasse engineers were consulted – their solution was aluminum. Frasse-supplied 5052 aluminum sheets provided the necessary strength and formability – at lower cost. Today Cobehn uses aluminum exclusively and benefits from these advantages:

- **ALUMINUM COSTS LESS** – pound for pound, you get three times as much metal (often three times as many parts), less weight to ship and handle.
- **EASIER WORKABILITY** – fabricating time and costs are reduced.
- **LONGER TOOL LIFE** – aluminum lengthens tool life; saves machining costs and down-time.
- **APPEARANCE** – aluminum requires less finishing; its clean lustre adds to the saleability of a product.
- **ALUMINUM IS ALWAYS AVAILABLE OVERNIGHT FROM FRASSE.**

Perhaps aluminum can be *your* happy ending too. If you have a cost problem, why not profit from the experience of Frasse engineers? There's no obligation – simply write or call your nearest Frasse office. You may be glad you did.

Call FRASSE for ALUMINUM

Screw Machine Stock · Bars · Rods · Wire
Sheets · Plates · Tubing · Pipe · Fittings · Valves
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LYNDHURST, N. J. • BALTIMORE, MD. • ROCHESTER, N. Y.

FINE PATTERN on 11" diameter "plunger" forms molding surface for press to make abrasive wheels. The Carborundum Company.

Airkool-S retains precise size and shape through heat treatment

Forming this precise pattern is easily accomplished with Airkool-S, a tough, sulphur-bearing, air-hardening tool and die steel with good machinability. Its excellent nondeforming properties are important too, because this pattern must be retained, without distortion, through heat treatment.

Because Crucible Airkool-S is consistently uniform and clean, no objectionable irregularities appear on this fine pattern. Furthermore, Airkool-S is much more abrasion resistant than typical oil-hardening tool steels, and is substantially tougher than high-carbon, high-chromium types.

Stocks of Airkool-S and dozens of other special tool steels are maintained in all Crucible warehouses—in a wide range of sizes. *Crucible Steel Company of America, Dept. T106, The Oliver Building, Mellon Square, Pittsburgh 22, Pennsylvania.*

CRUCIBLE STEEL COMPANY OF AMERICA

Canadian Distributor—Railway & Power Engineering Corp., Ltd.

Tubexperience in action

How does carbon content control hydraulic tubing quality?

Precise metallurgical controls help Superior's (SAE) Hydraulic Tubing outperform all other types

*Extra quality is the reason for the high ductility and longer, more reliable service you get with Superior hydraulic tubing. This extra quality is actually built in through precise metallurgical control.

Carbon content is held to .12% maximum through controlled atmosphere annealing. This assures highest ductility commensurate with the strength needed in the tubing.

Superior (SAE) Hydraulic Tubing is made from selected billets of non-aging steel. These are segregated by heat numbers, and a customer's order is always filled from one heat. This assures complete uniformity of all the tubing shipped to him in that order.

Each order also undergoes many critical examinations. Among these are checks on elongation, yield and ultimate strength. Every length is also 100% hydrostatically tested to maximum working pressure. And close control is exercised over grain size and microstructure. This is done microscopically with the aid of metallographic mounts. And finally, if requested, we furnish a notarized report on the chemical and physical properties of the tubing produced.

Superior (SAE) Hydraulic Tubing is furnished in dead-soft annealed temper for easy bending and flaring. Order in cut, multiple or random straight lengths up to 30 ft.—or longer in coiled form.

For more data on our (SAE) hydraulic tubing, get a free copy of Bulletin 39. Write Superior Tube Company, 2004 Germantown Ave., Norristown, Pa.

Superior Tube

The big name in small tubing

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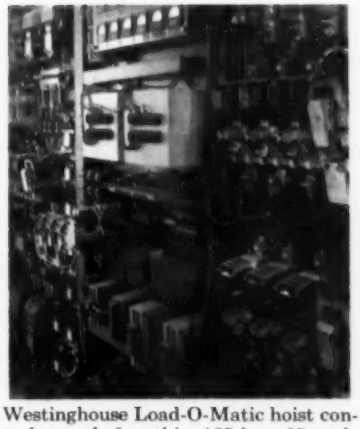
All analyses .010 in. to ⅜ in. OD—certain analyses in light walls up to 2½ in. OD

West Coast: Pacific Tube Company • 5710 Smithway St., Los Angeles 22, Calif. • RAymond 3-1331

U. S. Steel Uses Load-O-Matic for Heavy-Duty Scrap-Salvaging Operation



Westinghouse Load-O-Matic hoist control panel for this 125-hp, 25-cycle installation.

Hoisting a heavy roll-end hour after hour for crushing open-hearth slag during scrap-salvaging operation is rugged duty for any crane—and on this 60-ton Alliance crane Westinghouse Load-O-Matic* assures long, dependable operation at the United States Steel Corporation's Ohio Works.

Because Load-O-Matic is a heavy-duty, yet precision a-c crane system built to industry standards, it is highly favored for applications that call for unusual stamina, ease of operation and low-maintenance cost.

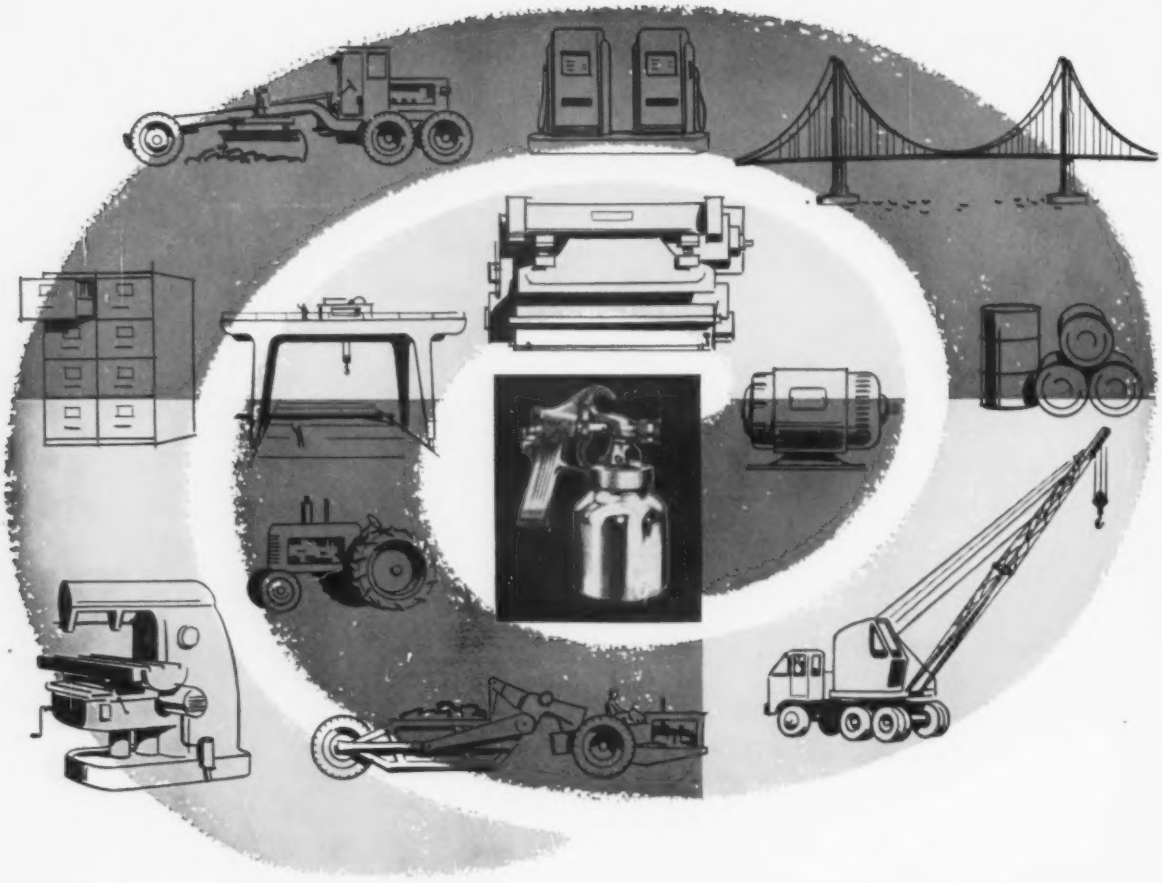
The Load-O-Matic system with stepless speed control over the full load range eliminates initial cost and complexity of d-c conversion equipment. Components, including controls, motors, brakes and gearing, are Westinghouse Power-Up products, built to work together and backed by Westinghouse unit responsibility.

To see Load-O-Matic in operation, call your local Westinghouse salesman. For more information, write Westinghouse Electric Corporation, 3 Gateway Center, P.O. Box 868, Pittsburgh 30, Pa. JI-96124

*Trade-Mark

YOU CAN BE SURE...IF IT'S

Westinghouse



Great advance in "air-dry" paint quality at no cost premium

with new Isophthalic based resins

With Oronite's superior new raw material, Isophthalic, years of extra service can be added to your metal surface coatings. Stronger film to metal bonding, outstanding film flexibility and better gloss retention of Isophthalic based coatings means improved paint performance. The tougher Isophthalic based films also have greater abrasion resistance, hold up far better under severe weather exposure, are more resistant to chemical and industrial fumes.

DEMONSTRATION—FORMULATIONS—PROOF. Let Oronite or your resins supplier show you how Isophthalic based resins can benefit the coatings you use. Oronite field representatives can demonstrate to you the superior properties of Isophthalic resin coatings—whatever your product requirements. Just contact the Oronite office nearest you.

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Quality in Ascendancy

The superiority of the vast number of products that are—and can be made from Roebling Cold Rolled Flat Spring Steel is a fact known throughout all industry.

You pay for mechanical and dimensional uniformity when you buy flat spring steel...you *get* it when you buy Roebling.

For information on how our products can help *yours*, write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

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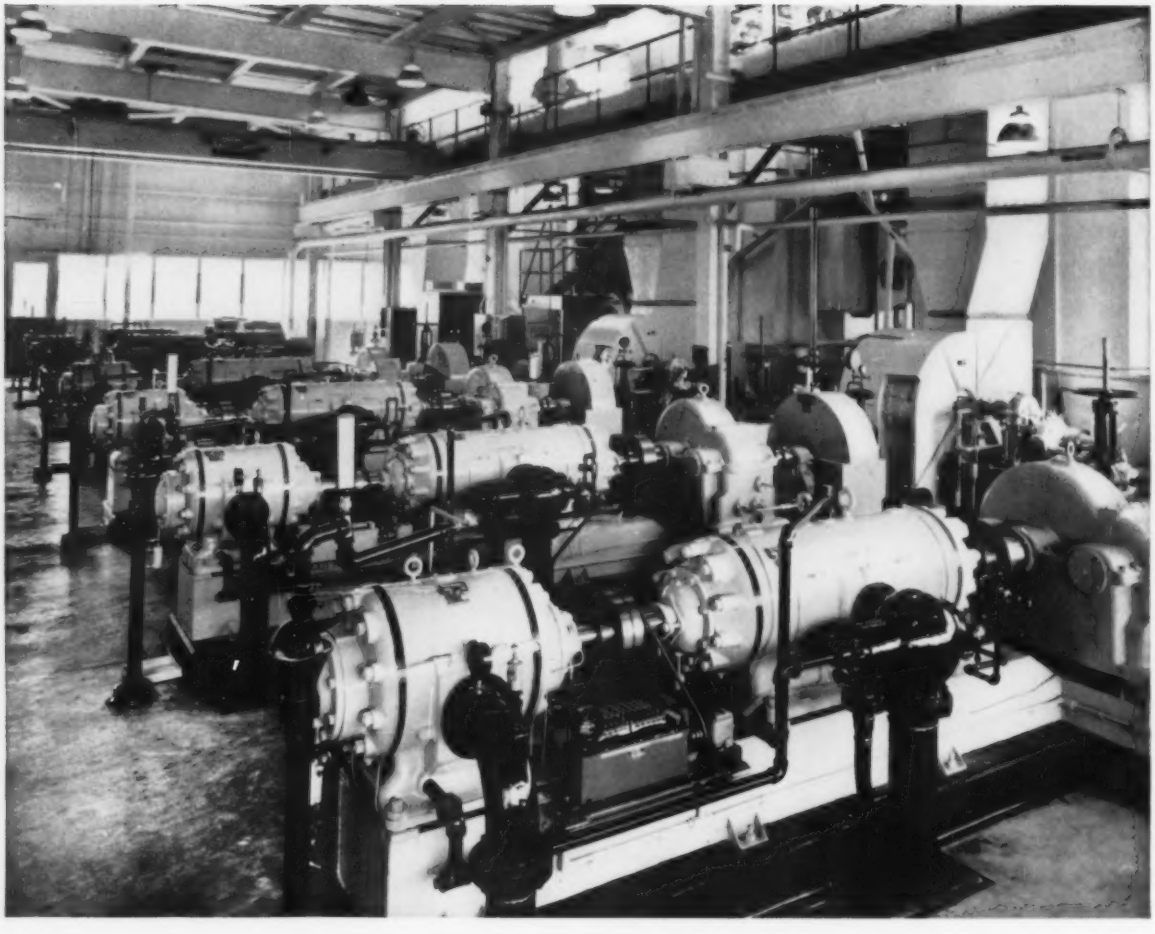
Roebling...Your Product is Better for it



4 YEARS - - 25,000 HOURS OPERATING PERFORMANCE!

This is just one of many production records set by Fuller Rotary Compressors—in this case by each of six machines installed in a leading aircraft plant. The only maintenance or replacement necessary over this period was installation of high and low pressure blades. Bearings held up 100%.

Fuller rotary compressors shown are four C-300-300H, steam turbine drive, capacity each 1248 to 1805 c.f.m., with speed ranges of 450 to 650 r.p.m., 125-lb. gauge pressure, and two electric motor drive, capacity each 1663 c.f.m., at 600 r.p.m., 110 lb. gauge pressure.

Your plant, too, can take advantage of the many cost-saving advantages of Fuller rotary compressors; such as smooth airflow, lack of vibration minimum of moving parts, adaptability to any production setup, and the advantage of "one man" operation.

Write today to Fuller Company and get complete data on how Fuller rotary compressors can give you more air power at less cost.

Fuller

FULLER COMPANY GENERAL AMERICA TRADE MARK

FULLER COMPANY
122 Bridge St., Catasauqua, Pa.
SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION
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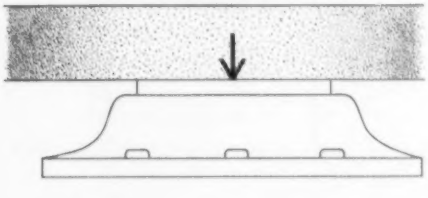
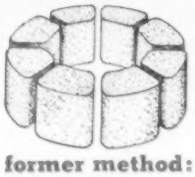
PIONEERS OF HIGH-EFFICIENCY VANE TYPE ROTARY COMPRESSORS SINCE 1930

Change to Gardner cylinder type wheel increases abrasive life over 14 times!

eliminates time lost in changing segments



Workpiece:
Cast iron fly wheel housing



former method:
Abrasive Segments
Life: 6.3 days
Downtime:
2 adjustments

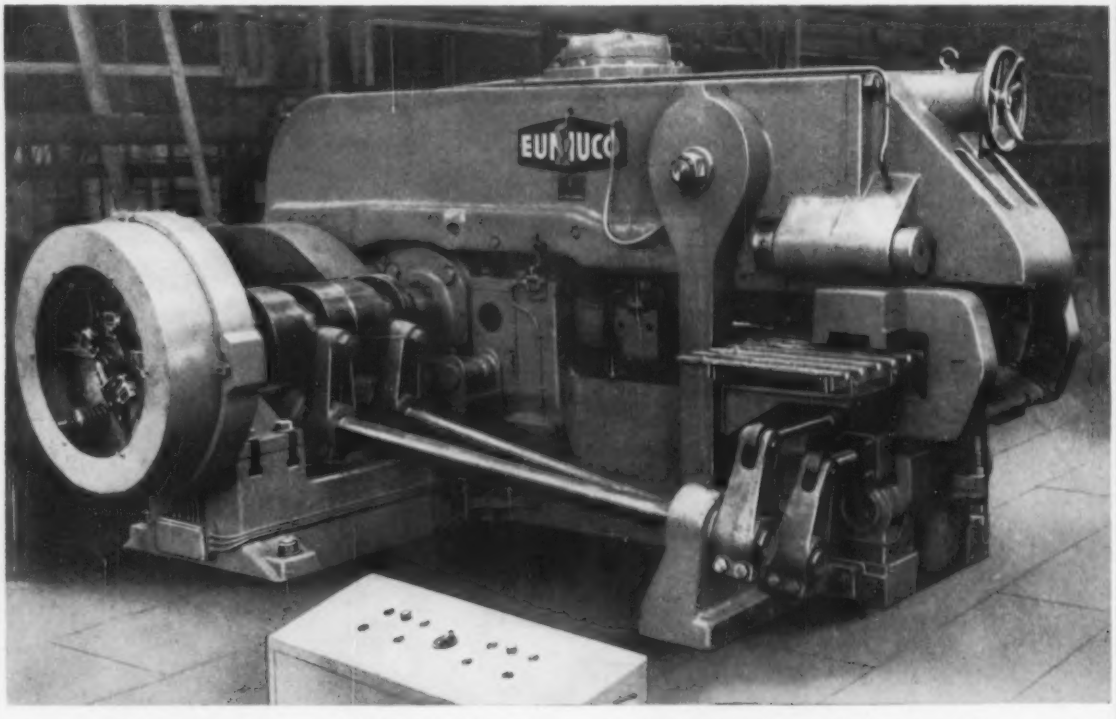
Gardner method:
Cylinder Type Wheel
Life: 88 days
Downtime:
no adjustments required

The big savings in grinding costs shown in this installation are a direct result of the *complete* service offered by Gardner Representatives . . . These men know both grinding machines and abrasives, and are in a position to provide practical, economical solutions to your disc grinding problems in all applications.

GARDNER

abrasive discs

BELOIT, WISCONSIN



Shown in illustration is 450 ton (2½") EUMUCO upsetter with automatic transfer. Available in a full range of sizes—from 1" (50 tons) to 9" (3150 tons). Gripping pressure equal to upset pressure in all models.

OVER 175 EUMUCO FORGING MACHINES

OF GERMANY
ESTABLISHED 1869

VERSATILE: Forge, upset, pierce, part-off, trim, form or bend—all on the same tool stand. The EUMUCO Forging and Upsetting machine will produce at high speeds a wide range of mass production items. Typical are bolts, wrenches, sucker rods, API tubing, dipper teeth, etc.

ADAPTABLE: Works with equal ease with slugs, pieces, or off the bar. Accommodates stock of any required length—manual feed or automatic transfer. Full room to maneuver stock in the horizontal plane; from axial position through 90 degrees left or right.

FLEXIBLE: Dies and tools "out in the open"; quickly installed, adjusted and removed for fast production changeover.

EASILY AUTOMATED: Unobstructed transfer across face of the machine; therefore ideally suited to "multi-pass" upsetting and automatic transfer.

Manufacturers of the famous EUMUCO High Speed Electric Drive Gravity Hammer with variable stroke control. Modernize your plant with the EUMUCO Hammer in one of these three ways:

a. A complete new installation (anvil, columns and drive).

b. A "set-up" of EUMUCO columns and drive on your anvil.

c. A "conversion" to EUMUCO drive, using your anvil and columns.

New Installations

Columbus Bolt & Forging Co.
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Corrosion Resistant Fastenings

Thompson Products, Inc.
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Arrangements for inspection through

UNITED STATES EUMUCO GENERAL REPRESENTATIVE

RICHARD E. KLEINHANS

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WAGNER ELECTRIC MOTORS...THE CHOICE OF LEADERS IN INDUSTRY

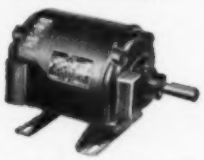
Reduce Down Time—Power your Equipment with *Dependable* Wagner Motors

Sixty-six years of experience goes into the building of Wagner Motors. Their reputation for reliability, their electrical characteristics, price and prompt delivery make them a sound choice for your equipment.

Whatever your motor requirements may be—single-phase or polyphase... ⅛ or 500 horsepower—Wagner can offer a standard motor that is entirely dependable in its specific application. A few of the many motors in the Wagner line are shown below.

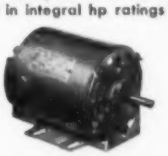
FRACTIONAL HP

SINGLE-PHASE



Repulsion-start induction, for heavy duty service. High starting torque, low starting current. ½ and ¾ hp, rigid base, sleeve or ball bearings. Also built in integral hp ratings through 15 hp.

Capacitor-start, for general purpose applications. High starting torque, normal starting current. ⅛ through ¾ hp, rigid or resilient base, sleeve or ball bearings. Also built in integral hp ratings through 5 hp.



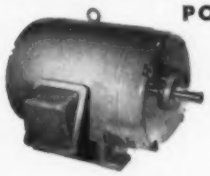
Split-phase, for easy to start applications. ⅛, ¼ and ⅓ hp, resilient base, sleeve bearings.

POLYPHASE SQUIRREL-CAGE

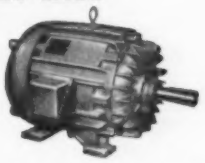
For general purpose applications. Normal starting torque. ⅛ through ¾ hp, rigid base, sleeve or ball bearings.

INTEGRAL HP

POLYPHASE SQUIRREL-CAGE



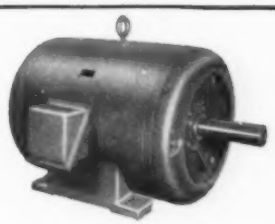
NEMA FRAMES 182 THROUGH 445U



Drip-proof, 1 through 125 hp, rigid base, sleeve or ball bearings.

Totally enclosed, standard and explosion-proof, 1 through 100 hp, rigid base, ball bearings.

FRAMES LARGER THAN 445U



Drip-proof, 150 through 500 horsepower, rigid base, sleeve or ball bearings.

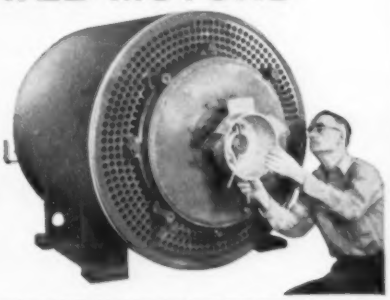
Totally enclosed, standard and explosion-proof, 125 through 250 hp, rigid base, ball bearings.

TUBE VENTILATED MOTORS

(Shown with end plate removed) Totally-enclosed fan-cooled, standard and explosion-proof. Ratings through 500 hp.

* * *

Wagner also furnishes Increment Motor and Starter Combinations, Hermetic Motors, and many special types. Mail coupon for complete information.



Wagner Electric Corporation
SERVING INDUSTRY SINCE 1891

WM58-11A

Wagner Electric Corporation
6403 Plymouth Ave., St. Louis 14, Mo.
Please send Catalog Sheets on Fractional hp Motors ☐
Integral hp Motors ☐

NAME_____
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COMPANY_____
ADDRESS_____
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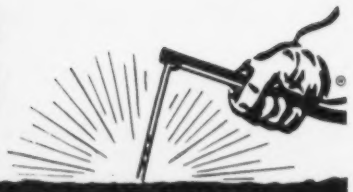
Weldynamics



ARC WELDING AT WORK CUTTING COSTS

I found that with Jetweld LH-70 electrodes, no matter what you weld, you can be sure of the job.

Andrew Wantuck
Capreol, Ontario

I welded 4000 feet of 4" pipe with Fleetweld 5-P. I found it the perfect rod for stringer, hotpass, fill and cover pass.

Also, I had the cleanest nick break that I ever had in a test using Fleetweld 5-P.

Ted Lee Regan
La Crescenta, California

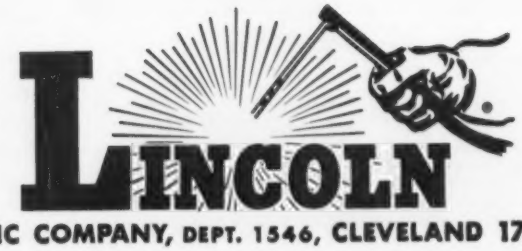
I just renewed my Navy arc welding certificate with Fleetweld 7 and I passed with flying colors. Most of this work is secret, but it's no secret that Lincoln products are doing their part in this field.

Golin E. Noel
Redondo Beach, California

Your weldor's opinion is worth a thousand words

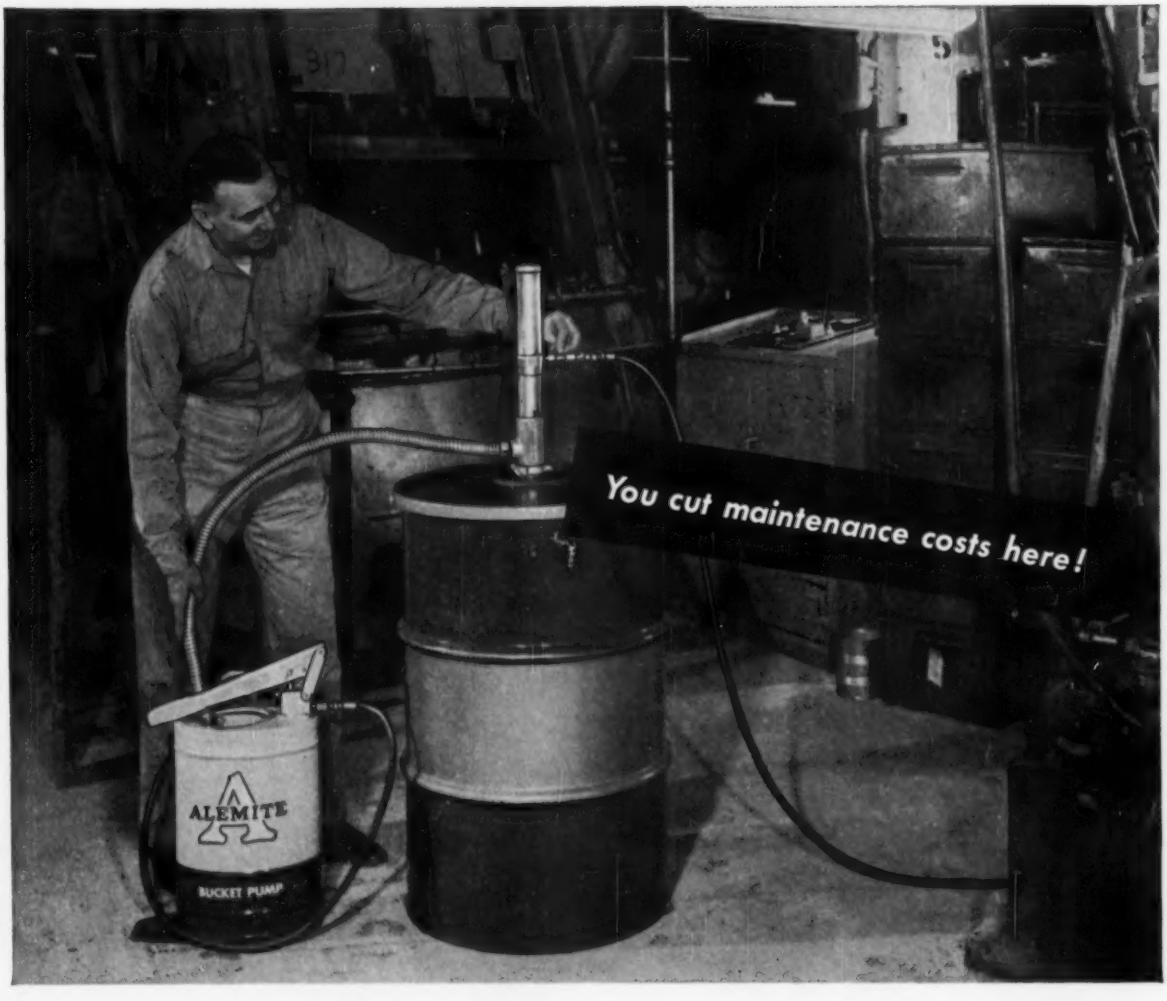
For data and specifications on Lincoln's complete line of mild steel electrodes write us and request Bulletin 7000.1.

The World's Largest Manufacturer of Arc Welding Equipment



© 1958 The Lincoln Electric Company

THE LINCOLN ELECTRIC COMPANY, DEPT. 1546, CLEVELAND 17, OHIO



Alemite Power Transfer of Lubricants Is 63% Faster Than Hand Method!

Wherever old-fashioned hand methods are used to transfer lubricants from original drums to other containers, time and money are wasted!

This high-speed, air-powered Alemite Transfer Pump transfers 37 pounds of pressure gun grease per minute, direct from original drum to loader pump, bucket pump or power gun. This gives you 63% faster transfer than by hand! And lubricant is always sealed—fully protected against mess, waste and contamination.

Pump also handles alcohol, cutting oils, kerosene—almost any non-corrosive, non-abrasive fluid used by the drum. Synthetic rubber air piston requires no oiling. Fully adjustable delivery rate . . . weighs only 15½ pounds!

Step up to fast-moving, time-saving transfer of fluid and semi-solid materials. Check Alemite's complete line of lubrication equipment for industry.

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DIVISION
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CORPORATION

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1850 Diversey Parkway, Chicago 14, Illinois

Please send me your complete catalog of Alemite industrial lubrication equipment.

Name .....

Company .....

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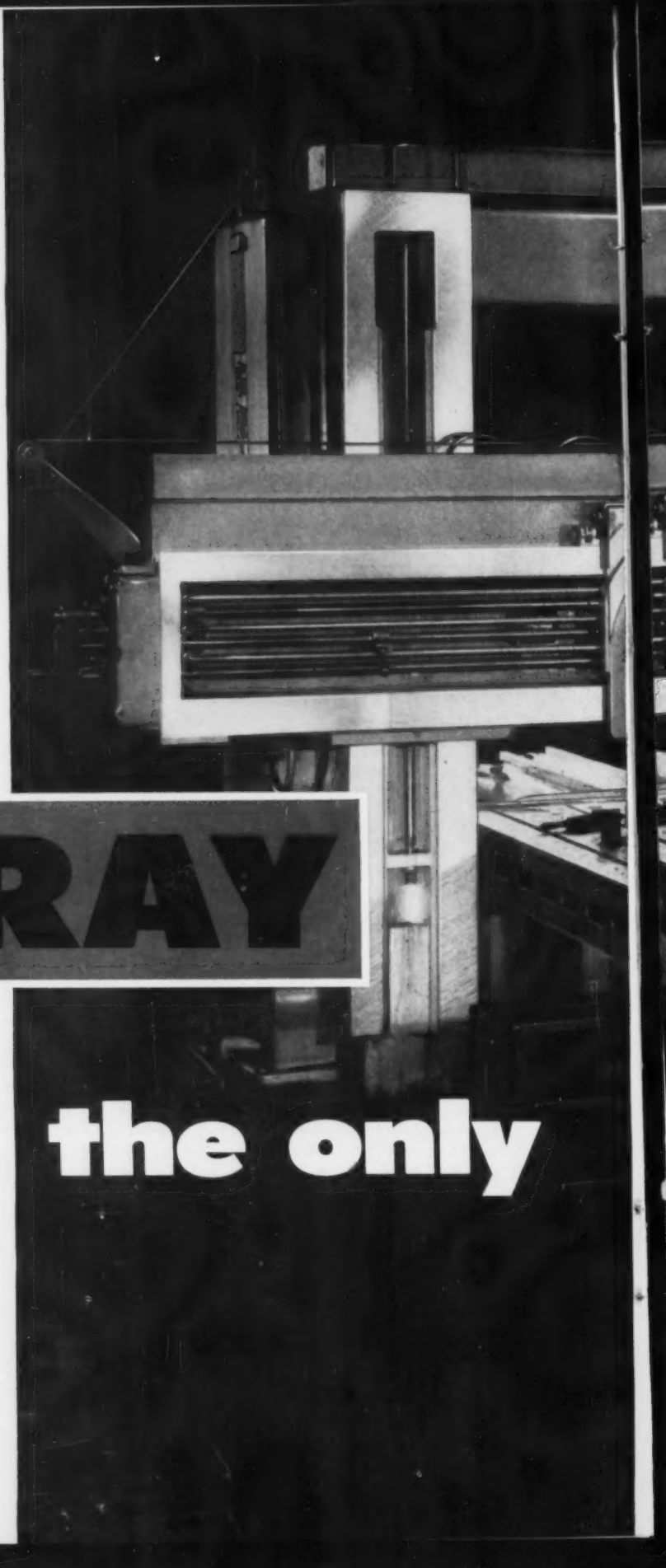
City ..... Zone ..... State .....



heavy-duty planing

The Gray Universal is the world's most powerful planer available for conventional planing. Its rigidity and speed are ideally suited for modern carbide cutting.

double-cutting

The flick of a lever, the touch of a button permits double-cutting. Elimination of the idle stroke insures the world's most efficient flat surface machining. Only simple carbide tools are required.

triple-cutting

Rough and rough-finish plane at the same time. Rough by double-cut planing and simultaneously rough-finish with a single point tool. Then finish plane without a tool change.

cross planing

Eliminates extra settings by cross planing the occasional keyways, chamfered corners, and other troublesome small cross surfaces that formerly added hours to your set-up time.

a GRAY the only

This new 84" x 60" x 18' Gray Universal Planer shown in operation at the Koppers Co., cuts going - cuts coming, removes big chips at double rate. There is no idle return stroke to waste precious production hours. Instantaneous reversals with heavy duty double-cutting make this the first REAL new development in modern planers ***...a GRAY exclusive.***

Double tables further virtually eliminate the costly set-up time required by ordinary planers.

The multiple savings received by users of the new Gray Universal make it a wise investment.

If it's new... it must be a GRAY.

The G. A. GRAY Co.,
Cincinnati, Ohio

GRAY Universal Planer shown in operation at the Baltimore plant of Koppers Company, Inc., Metal Products Division.

new planer

USS Amerstrip..

Shown here is the difficult deep-drawing operation for the Amerock window sash lifts. The sash lifts are being blanked, drawn, pierced and trimmed on a 60-ton Rockforn Punch Press at the rate of 1100 per hour. USS Amerstrip has performed so successfully on this operation that it is now used exclusively for this window lift.

. . solves difficult double-draw problem

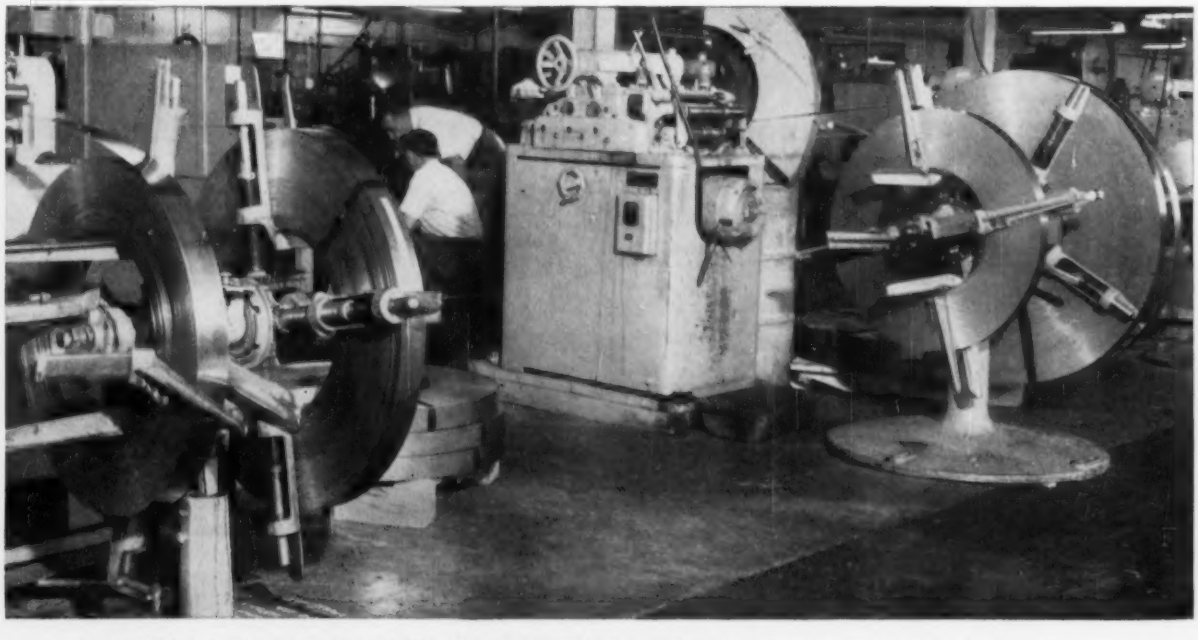
. . maintains finish for plating

When the Amerock Corporation of Rockford, Illinois, decided to make their unusual sash lift from strip steel instead of another metal, they ran into difficulties. The several different types of strip steel they tried failed to stand up under the severe forming operation. American Steel & Wire Division was then consulted, and their recommendation for a 4 Temper, #2 Finish, Deep-Drawing USS Amerstrip proved ultimately to not only fulfill the deep drawing requirements, but permitted satisfactory plating.

Joe Ellis, foreman of Amerock Blanking Department, said, "AS&W did an excellent job in developing a strip steel which would do this difficult double draw, yet maintain its finish for plating. We have had more trouble from other steels doing simpler jobs."

In the past 28 years the Amerock Corporation has grown to be the world's largest manufacturer of cabinet hardware. In addition to the window lift, many other items in their complete line of functional hardware are fabricated from USS Cold Rolled Amerstrip, including drawer pulls, hinges, knobs and cabinet hardware.

American Steel & Wire. General Offices: Rockefeller Bldg., Cleveland 13, Ohio. *USS and Amerstrip are trademarks*



Coils of USS Amerstrip are being fed into the Lytell Straightening Machine. When the smaller coil is gone, the holder is pivoted to permit the remaining coil of Amerstrip to be fed into the machine.

American Steel & Wire Division of USS **United States Steel**

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors • Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors • United States Steel Export Company, Distributors Abroad

BRASS

...especially Western Brass...
has done...is doing...
and will do...many jobs better than
any other metal. Western Brass
is "tailor-made" for
each job.

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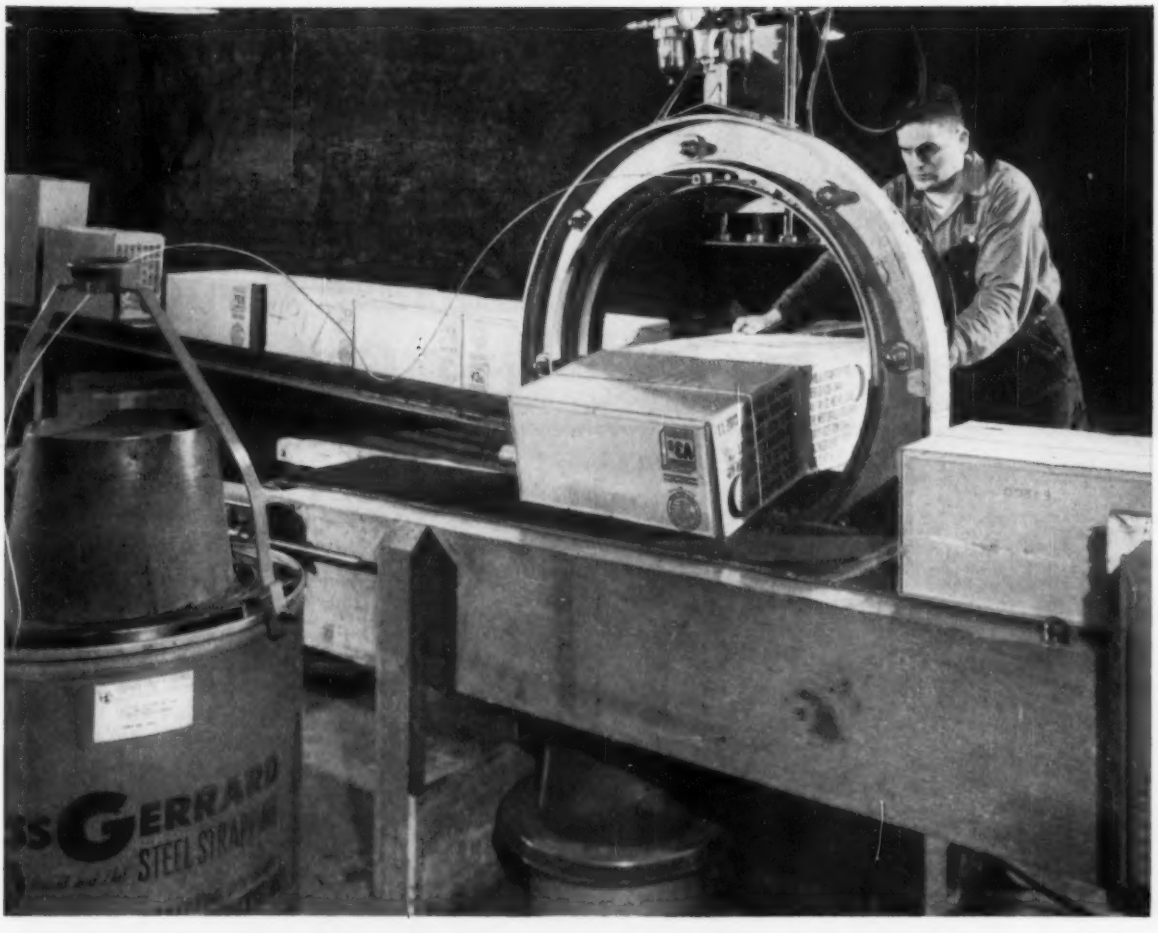


Labor costs cut by 66%, yet production goes up 33%

Installation of two USS Gerrard Model 12 Automatic Strapping Machines has enabled the Natural Storage Company, Inc., Bonner Spring, Kansas, to cut their labor costs more than half. Yet, because the machines are *completely automatic*, the company's production of packaged rations for the Army has increased from 6,000 to 8,000 units a day! At the same time, the Gerrard Model 12 has enabled them to eliminate rejects caused by difficulty in observing close tolerances on strap placement and tension.

According to the company, the new Model 12's do a flawless job using 16-gauge USS Gerrard Round Steel Strapping with a 95,000 to 125,000 tensile strength. They have found that the round steel strap is less expensive—both initially (because there is more footage per pound) and in actual operation. And because the strapping is packaged in 500-pound drums, it means approximately 10 less shutdowns for strap changes a day.

The compact, easy-to-operate USS Gerrard Model 12 makes up to 24 cycles per minute on packages from 8″ x 2″ to 26″ x 20″. Its one-shot built-in lubrication system and rugged construction mean minimum service and maintenance. Packages are held firmly in place during the strapping operation by a compression device. Tension can be predetermined and maintained, and you don't need to adjust the machine for packages of varied shapes and sizes.

Your USS Gerrard sales representative can give you more details. Contact him soon for information on all USS Gerrard products.

USS and Gerrard are registered trademarks

Gerrard Steel Strapping Dept.,
United States Steel Supply
Division of
United States Steel

USS

Gerrard Steel Strapping Department
U. S. Steel Supply Division
United States Steel Corporation
208 South La Salle St., Chicago 4, Ill.

Without obligation, please send me the new Model 12 Brochure.

Name .....

Company .....

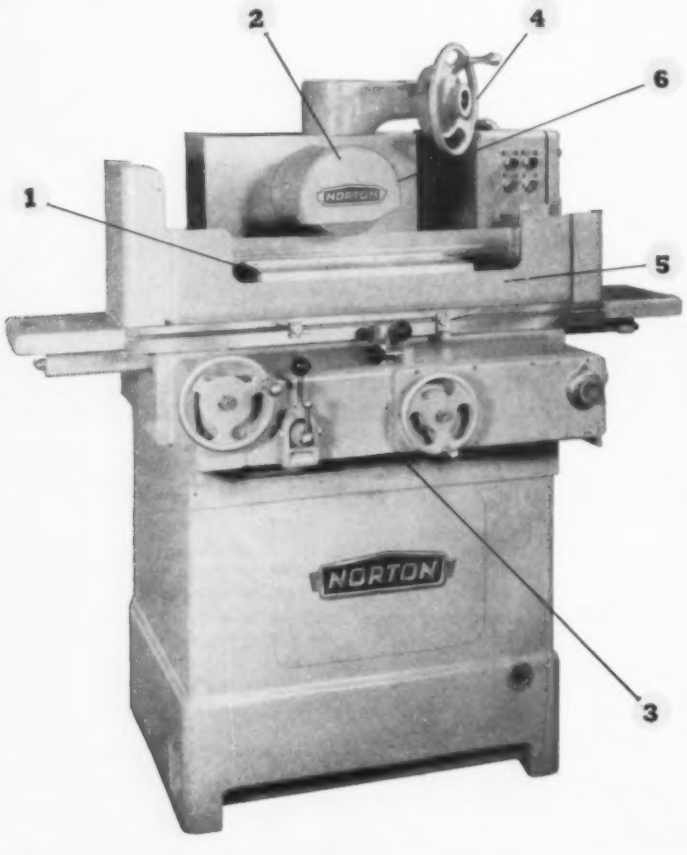
Address .....

City ..... **State** .....

Have Salesman call ☐

Now–FINISH FLAT

New Norton 6" x 18" Surface Grinder Ready For Immediate Delivery



You FINISH FLAT FASTER with the new Type S-3 hydraulic which is equally efficient for long production runs or a wide variety of toolroom grinding because of its new cost-cutting features. It produces plane surfaces smoothly — with automatic or manual cross feed and with such fast, cool-running action that it saves time and money on every job.

Ask your Norton Representative for the whole story. Or write us direct for Catalog 2128. And remember: only Norton Company offers you such long experience in both grinding machines and grinding wheels to bring the "Touch of Gold" that helps you produce more at lower cost. NORTON COMPANY, Machine Division, Worcester 6, Massachusetts.

Profit from these benefits

1. Get Jobs Done Fast and Cool — high table speed, *125 feet per minute, maximum.* **2. Handle Tall Work Pieces** — greater vertical capacity, *15"*. **3. Get Lasting Accuracy** with guide-rail cross slide construction. **4. Control Vertical Feed Accurately and Position Fast** with two-speed .0001" increment hand wheel. **5. Benefit from Better Sighting and Loading** due to contoured splash guards. **6. True Forms, Even on Worn Wheels** because of recessed wheel spindle housing.

To Economize, Modernize with **NEW**

NORTON

GRINDERS and LAPPERS

Making better products... to make your products better

NORTON PRODUCTS
Abrasives • Grinding Wheels • Grinding Machines
Refractories • Electrochemicals
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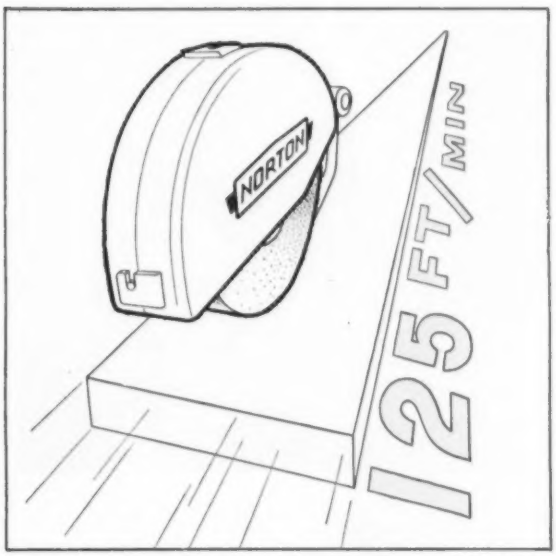
Coated Abrasives • Sharpening Stones
Pressure-Sensitive Tapes
District Offices
Worcester • Hartford • Cleveland • Chicago • Detroit
In Canada: J. H. Ryder Machinery Co., Ltd., Toronto 5

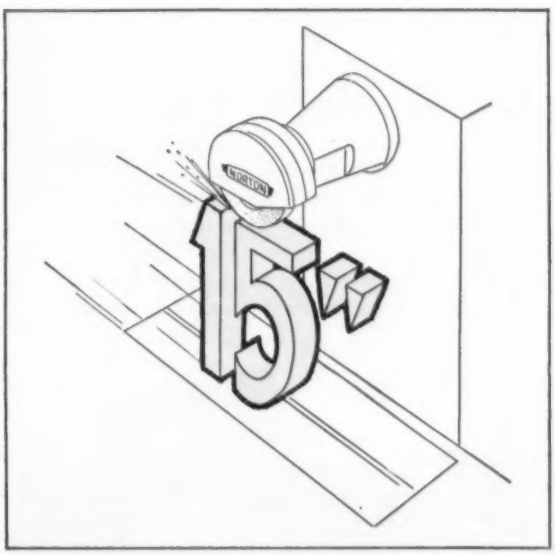
FASTER.... at lower cost

These and many other new features make this machine a "must" for your surface grinding jobs.

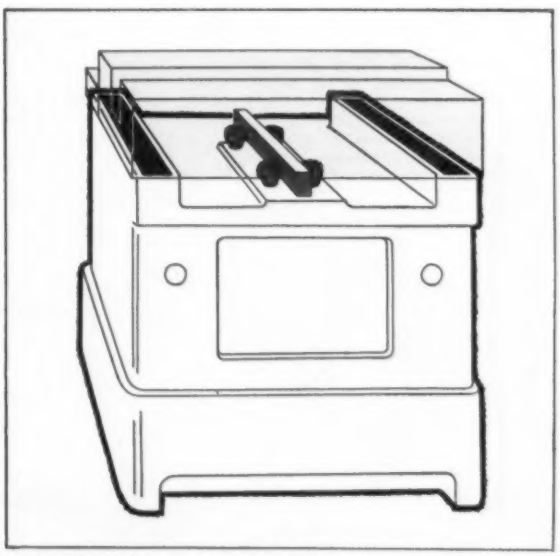


Finish flat faster, cut grinding time and increase production, with high table speed, 125 feet per minute.

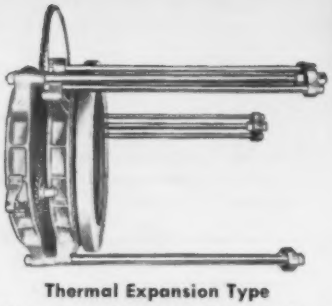
Heat goes off in the chips, due to new, high table speed. This cooler grinding permits faster production on heat-sensitive metals.



Handle taller work pieces with high-grind wheel head construction. The vertical capacity from the table top to the bottom of standard full size 8" diameter grinding wheel is 15"



Widely spaced, flat ways and guide-rail cross slide design maintain cross feed accuracy, providing lastingly accurate grinding of shoulders or parallel surfaces.



Thermal Expansion Type

Linear expansion of the thermal tubes frees the goggle plate for swinging to open or closed position. The contraction of the tubes clamps the plate, forming a gas-tight seal. Sizes: 36" to 120".

Mechanical Type

Powerful clamping force applied at all points around disc periphery provides a safe seal for gas mains from 6" to 84".

Bailey

GOGGLE VALVES

Bailey Valves assure safety plus efficient service on gas washers, blast furnace mains, precipitators and boiler plants. Bailey Valves operate satisfactorily, regardless of the length of time they may stand unused. Their dependability has been proven thoroughly by hundreds of installations in major steel plants.

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FLUORIDES

manufactured
in one of the
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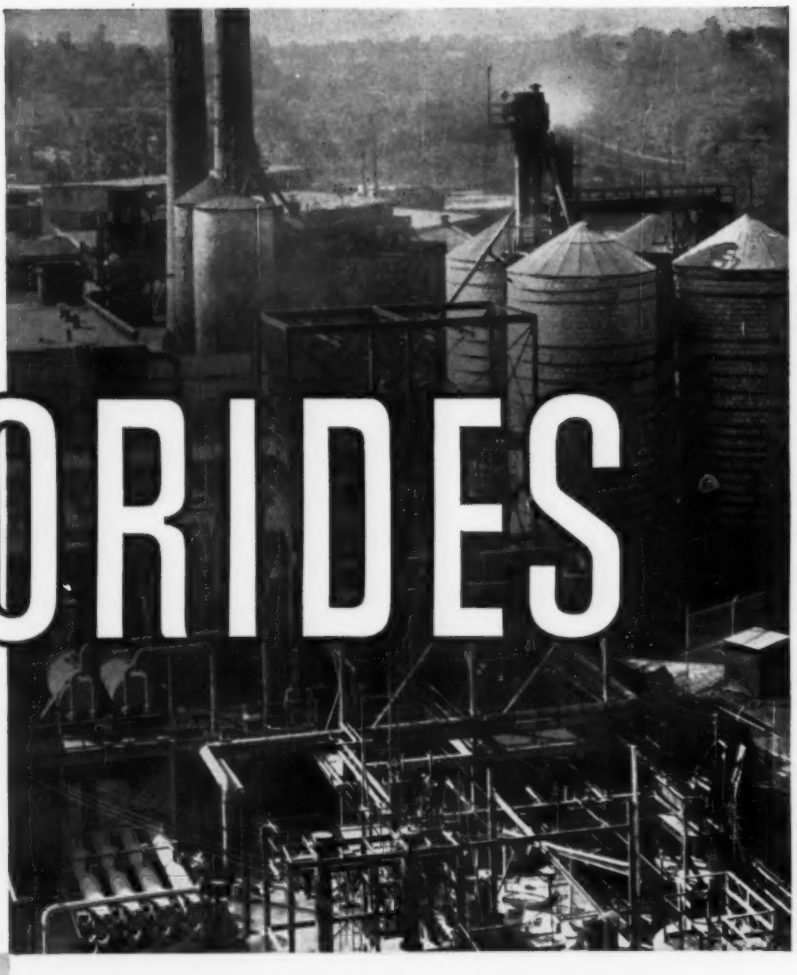
in the world



Unloading mineral fluospar which comes to us from various parts of the world.

Write for your free copy of M.C.A. Chemical Safety Data Sheet SD-25 on properties and essential information about HYDROFLUORIC ACID Anhydrous and Aqueous.

BORON TRIFLUORIDE
HYDROFLUORIC ACID
ANHYDROUS...AQUEOUS

and a long list of other production-controlled high-quality fluorides

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Barium Fluoride
Bismuth Fluoride
Boron Trifluoride
Boron Trifluoride Complexes
Cadmium Fluoborate
Chromium Fluoride
Copper Fluoborate
Fluoboric Acid
Fluorine Cells
Fluorinating Agents
Frosting Mixtures
Hydrofluoric Acid Anhydrous
Hydrofluoric Acid Aqueous
Hydrofluosilicic Acid
Lead Fluoborate
Metallic Fluoborates
Nickel Fluoborate
Potassium Bifluoride
Potassium Chromium Fluoride
Potassium Fluoborate
Potassium Fluoride
Potassium Titanium Fluoride
Silico Fluorides
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If required you are invited to draw on the knowledge and experience of our staff of technical specialists on fluorides.

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HASTINGS-ON-HUDSON, N. Y. • PHILADELPHIA • PITTSBURGH

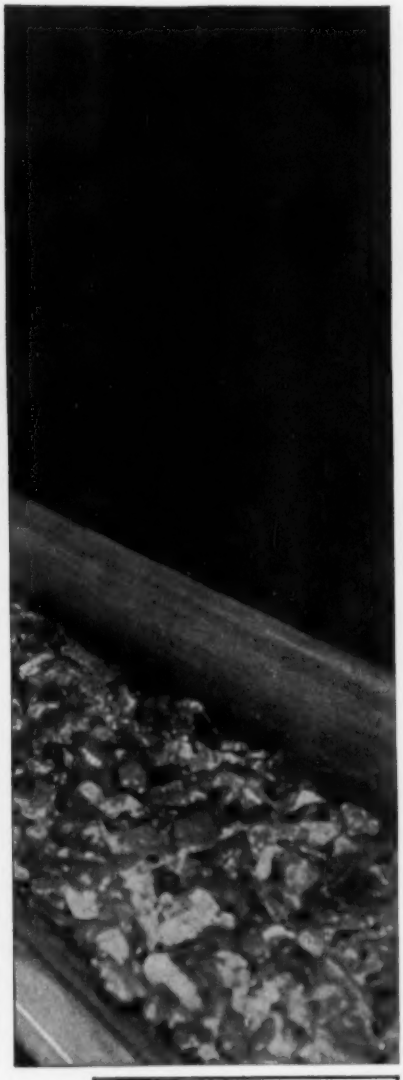
It's the Last Third of an R/M Conveyor Belt that Gives

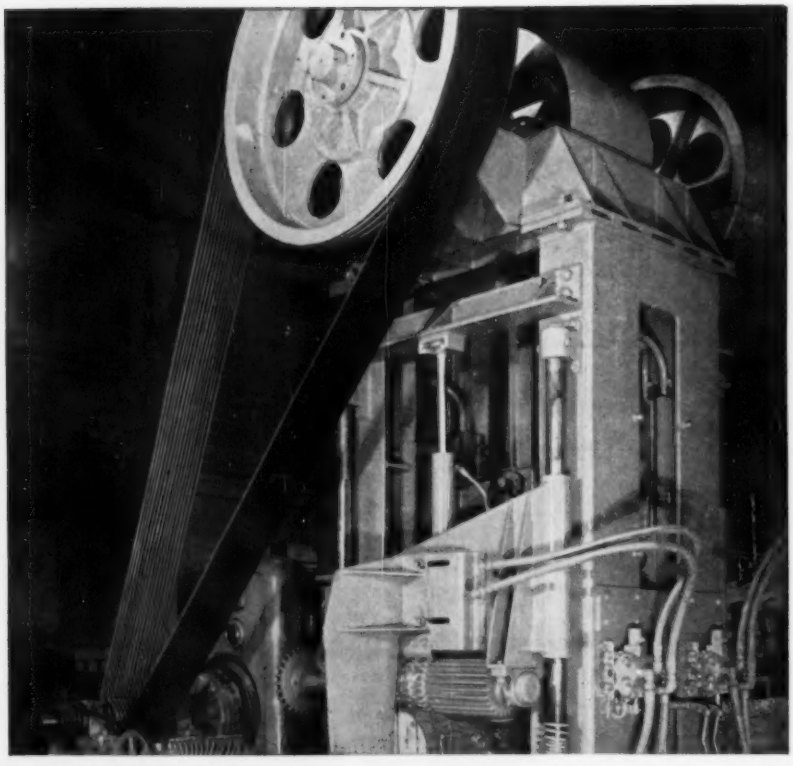
. . . "More Use ~~per~~ *for Your* Dollar"

R/M engineers recognize that *every* belt feature — troughability, resiliency, fastener-holding ability, strength member fabric, cover toughness and thickness — all help to determine the true cost of conveyor belt on your job. That's why each component part of Ray-Man Conveyor Belt is precision proportioned to assure better belt balance where it pays off most for you — in *longer* — ⅓ longer — belt service life! These features make the difference!

- Trains Naturally — Handles Fuller Loads
- Resists Impact and Ripping — Takes Abusive Loads
- Double Compensation — Relieves Outer Ply Stress — Flexible
- Holds Fasteners — Requires No Breaker Ply
- Exclusive "XDC" Cover—Protects against Wear, Tear, Cuts and Abrasion
- Moisture and Mildew Resistant

Extra cushioned Homocord and rugged R/M Tension-Master also give you longer belt service life. Write for Catalog 25 CB.





R/M POLY-V® DRIVE— New, patented heavy duty Poly-V* Drive delivers up to 50% more power in the same space as multiple V-drive . . . or equal power in as little as ⅔ the space. Single unit belt design eliminates multiple V-belt "length matching" problems. More constant speed ratios, less wear on belt and sheaves, smoother running. Write for Bulletin #6638.

HOMOFLEX HOSE— Light, strong, "flexible as a rope" . . . easiest handling hose made for air, water, other fluids and gases. Mandrel-made *without* pre-set twist. Resists kinking, coils and uncoils freely in *any* direction. Homogeneous tube-to-cover bond; never any separation. Uniform inside and outside diameters for easy coupling. Write for Bulletin #6879.

Courtesy of the Ingalls Shipbuilding Corporation

TRAINS NATURALLY

DOUBLE COMPENSATION RELIEVES OUTER PLY STRESSES

*Poly-V is a registered Raybestos-Manhattan trademark.

RMB03

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R/M

Another MINSTER First in Press Design Operating in Production Lines Since 1953 Has Proved That You *Can* Get

More Single Stroke Operations

The exclusive "hidden value" in the Minster MS2 press is Minster's patented Intermediate Shaft Combination Air Friction Clutch and Brake Drive arrangement.

This drive arrangement makes it possible to get a higher single stroke efficiency, based upon rated continuous press speed, and the widest speed selection ever available on large double geared straight side presses.

Here's what this exclusive Minster feature can mean to you

- **More production on manually fed or automated presses.**
- **Faster starting and stopping . . . more single stroke operations per minute.**
- **Less flywheel energy loss . . . lower power consumption.**
- **Reduced clutch wear . . . less maintenance and adjustment.**
- **You may select either the faster speeds of a conventional single geared machine or the slower speeds of a double geared press. Two-speed drive (optional) allows selection of a speed to fit different type operations.**

How it works:

MS2 presses are double geared and have twin drive gears on the crankshaft. Minster's patented Combination Air Friction Clutch and Brake unit is mounted on a slower turning *intermediate shaft* instead of within the flywheel on the high speed drive shaft.

This means lower contact speed of clutch friction surfaces, resulting in very little heat on linings and less wear.

Flywheel can be run at maximum RPM for maximum energy without limiting speed of operations.

Additional Minster MS2 Press Features

Minster Recirculating Oil Lubrication system provides continuous oil film on all bearing surfaces . . . allows closer bearing and gib clearances for reduced lash and better slide guiding.

All air, lubrication and electrical systems are complete, enclosed within the press frame line, yet easily accessible. Electrical circuits and pneumatic systems for manual or automated production. Controls mounted within cabinet type uprights.

Massive, box type, four-piece tie rod frame for rigidity.

Precise slide to bed parallelism. Slide fully guided within gibs before midstroke is reached.

Outboard drive sheave for easy belt changing.

All wear surfaces bronze-lined, precision fitted and replaceable.

Per Minute

MINSTER®
MS2 Presses

150 TO 500 TON CAPACITIES

in five widths R to L in each capacity—two F to B dimensions in each capacity.

Dimensions meet J.I.C. Standards

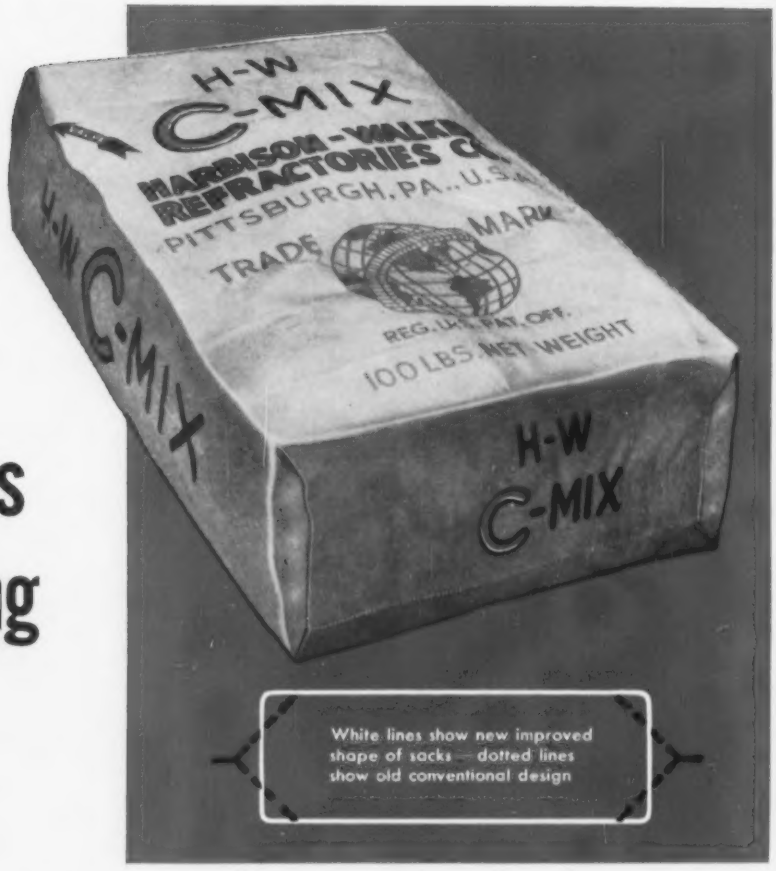
THE MINSTER MACHINE COMPANY
MINSTER, OHIO

NOW...

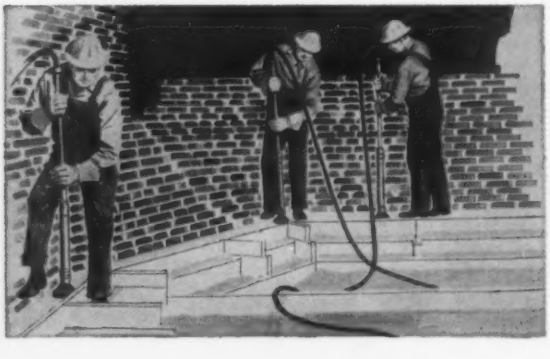
another added benefit...

square-end sacks facilitate handling and storage of Harbison-Walker

C-MIX and MAGNAMIX



H-W C-MIX (high purity seawater periclase) used for contour-rammed open hearth and electric furnace bottoms greatly reduces furnace downtime, saves labor and avoids burning-in sacrifice of refractory superstructure. And with its measurable margin of superior properties, costs are decidedly lower and furnace availability is greatly increased.



HIGH MAGNESIA CONTENT — Made from high purity seawater periclase with the magnesia content over 92%, H-W C-MIX best withstands the corrosive action of highly basic slags.

STABLE — It is fully converted to periclase and has excellent volume stability with negligible shrinkage at highest operating temperatures.

HYDRATION RESISTANT—H-W C-MIX is unique in its high degree of resistance to hydration.

STRONG — High strength over the entire range of steel furnace temperatures accounts for its excellent resistance to erosion.

DENSE — High density and low permeability retard penetration by molten metal and corrosive slags.

ECONOMICAL — H-W C-MIX provides the most durable monolithic hearths with low installation costs.

World's Most Complete Refractories Service

Palletizing and storage costs are lower with these sacks and they save space, avoid slippage and tear with reduced wastage. Brand shows on all sides for ease of identification.

RAMMING MIXTURES

H-W MAGNAMIX of 80% magnesia content stabilized as periclase, is made from dead-burned Washington magnesite. It is particle-sized to secure maximum density. While H-W MAGNAMIX is dependable for making new bottoms, it is especially adapted for bank maintenance, patching deep holes and repiping tapholes. It sinters into a hard dense monolith in a very short time at approximately 1000° F. lower than operating temperatures.

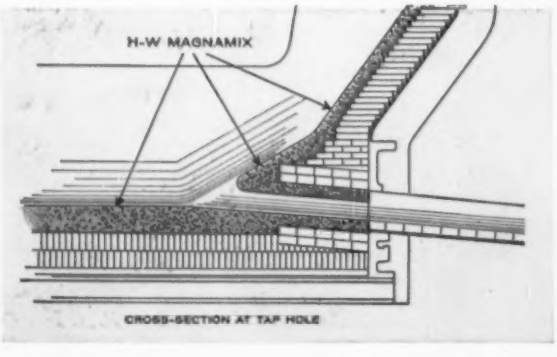
HIGH MAGNESIA CONTENT — It is used without the addition of slag or scale, thus avoiding dilution of its high magnesia content.

DENSE — As rammed into place, it becomes exceedingly dense and impermeable. When heated to operating temperatures, its density is further increased and a homogeneous monolith is formed.

STRONG — H-W MAGNAMIX has a strong cold set with the unusually high crushing strength of 1500 psi.

DURABLE — Its excellent resistance to erosion accounts for its splendid records and wide adoption in taphole service.

EASY TO USE — It has superior properties for patching large holes in banks and bottoms, and is applied by air-ramming, gun placement or by hand in hot patching.

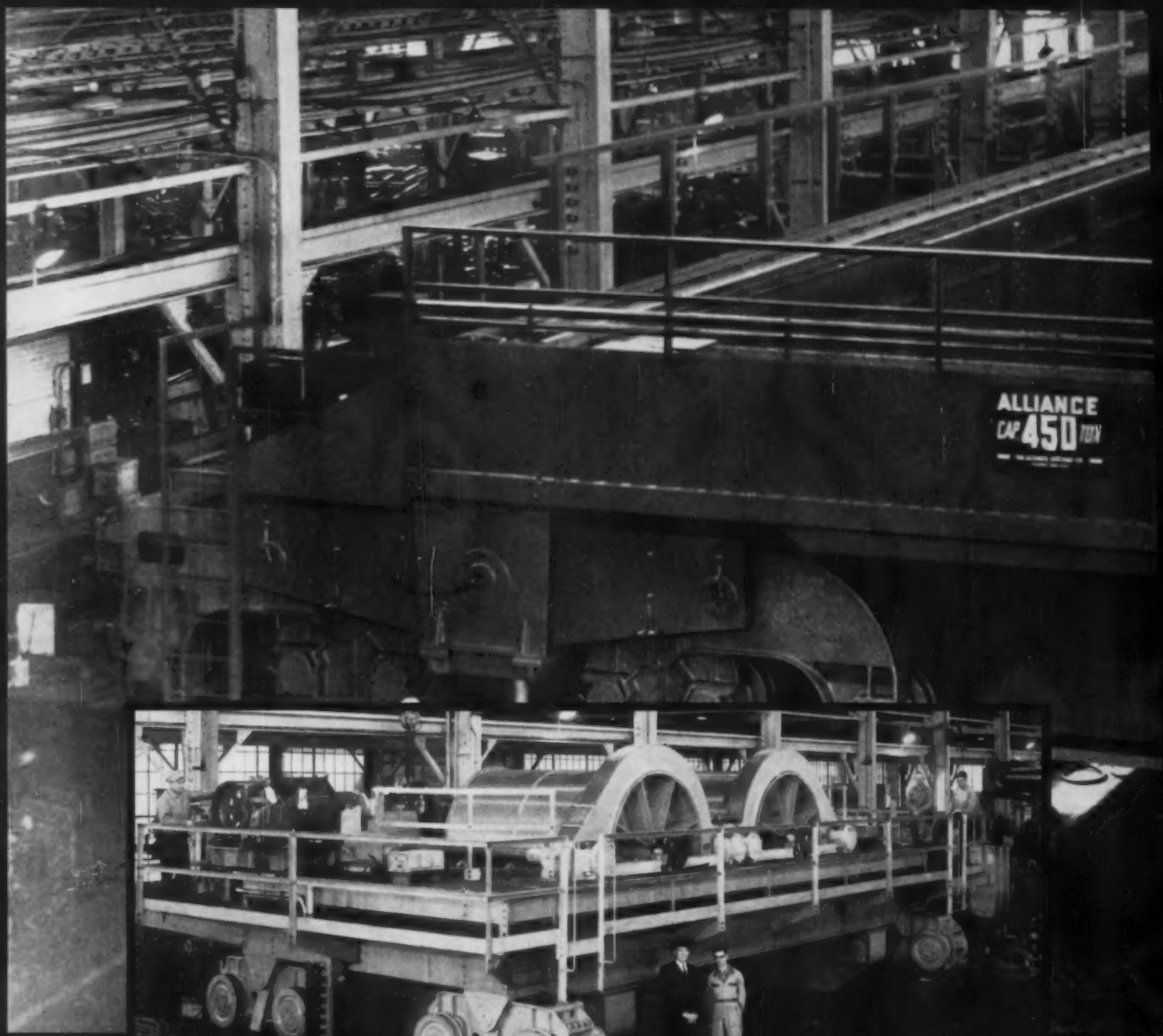


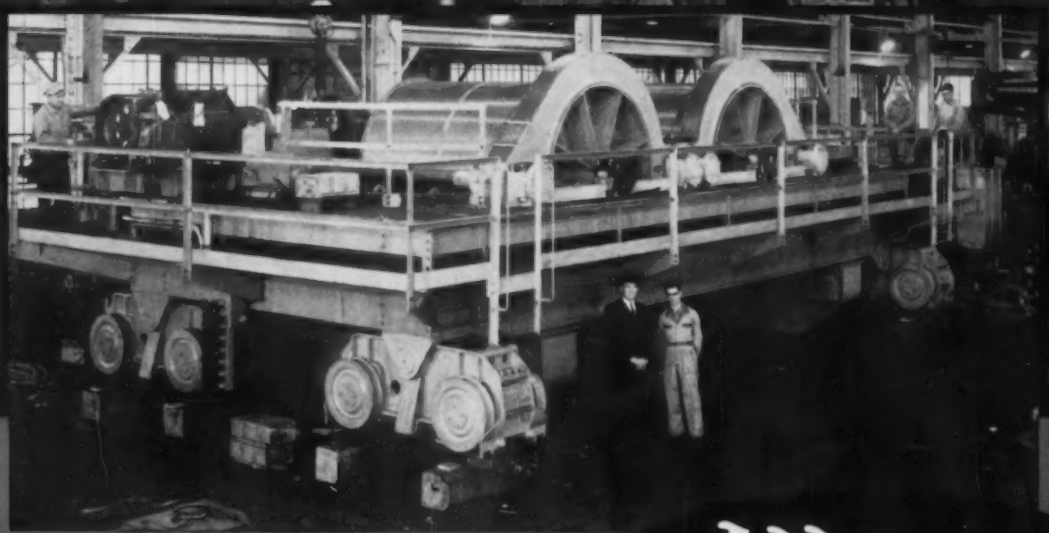
HARBISON-WALKER REFRACTORIES COMPANY

AND SUBSIDIARIES

General Offices: Pittsburgh 22, Pennsylvania

. . . AS BIG





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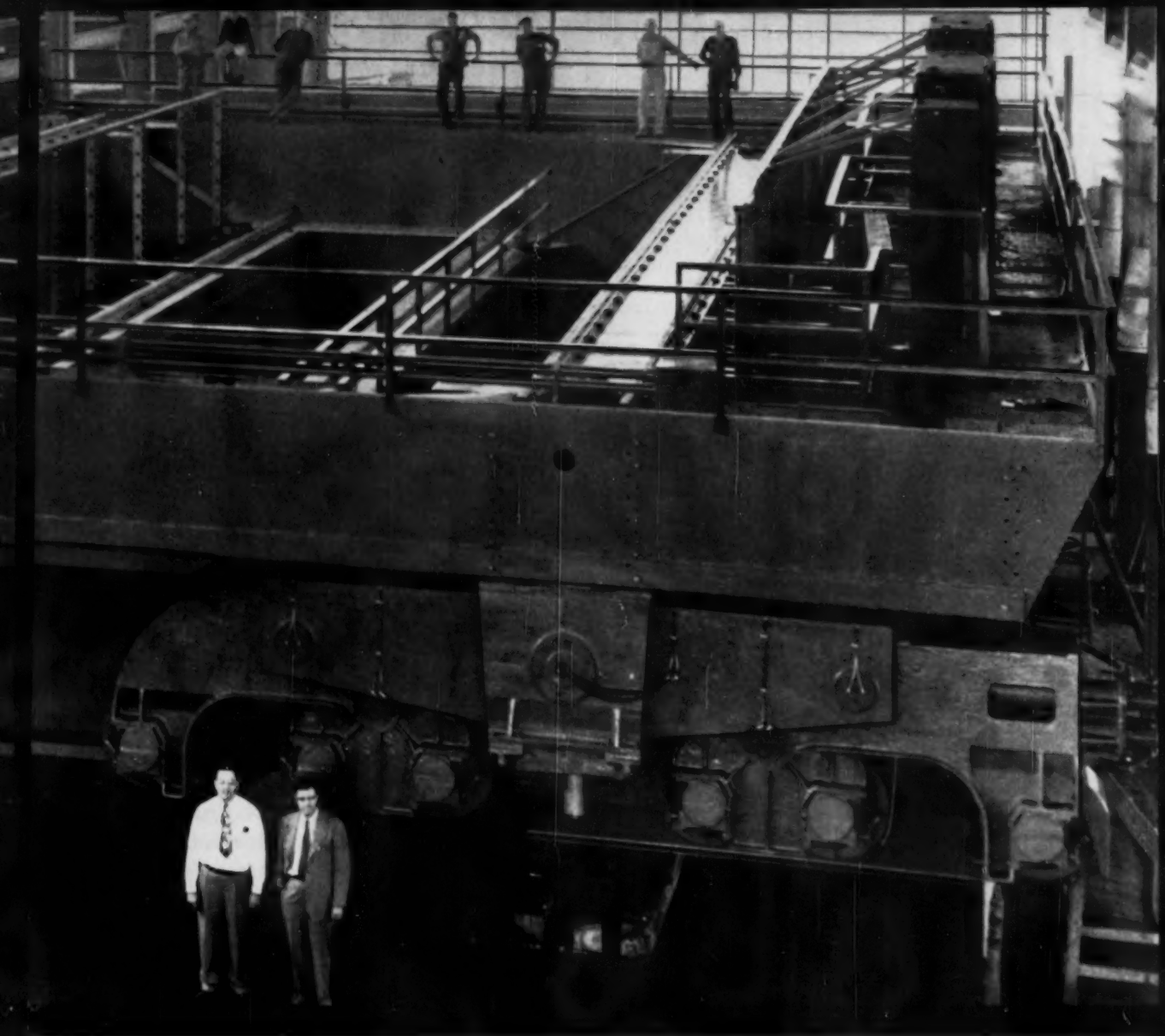
STRIPPER CRANES • SLAB AND BILLET CHARGING MACHINES • OPEN HEARTH CHARGING
MACHINES • SPECIAL MILL MACHINERY • STRUCTURAL FABRICATION • COKE PUSHERS

Alliance

"Give us the Runway and we'll lift the World"

AS THEY COME!



• This mighty 450-ton Alliance open hearth crane is one of the largest. It has handled test loads of 610 tons! And it's safe! If a motor fails, the second motor will handle the rated load. All gearing functions continue as though operated by two motors and still remain within the quarter-hour rating. The fully enclosed gears run in an oil bath.

If your materials handling problems involve big lifts or transfers, you'll want to talk to the Alliance engineers — in Alliance or Miami. They've worked on the biggest — from big gantry cranes to open hearth charging machines. Their experience will help you solve problems in less time and in the most economical manner.

THE ALLIANCE MACHINE COMPANY

MAIN OFFICE • ALLIANCE, OHIO

Tough specifications? You bet.

That's why Maginniss Power Tool Company, leading producer of concrete vibrators, brought its tubing problems to Ohio Seamless. Our engineers recommended Ostuco NP-3 C1040 tubing for Hi-lectric Concrete Vibrator housings.

Here's what Maginniss says after using Ostuco NP-3 Tubing exclusively for 11 years, *". . . only Ostuco NP-3 Tubing meets our requirements for abrasion resistance and easy machinability. Its fine grain structure cuts clean every time. Furthermore, we have never had a thread failure in the field traceable to tubing quality."*

Every product, including yours, has materials or production process problems that are uniquely its own. If they involve tubing, Ohio Seamless has the answer. Just contact our nearest sales office, or the plant at *Shelby, Ohio—Birthplace of the Seamless Steel Tube Industry in America.* AA-7477

SALES OFFICES: Birmingham • Charlotte • Chicago (Oak Park) • Cleveland Dayton • Denver • Detroit (Ferndale) • Houston • Los Angeles (Lynwood) Moline • New York • North Kansas City • Philadelphia (Wynnewood) • Pittsburgh Richmond • Rochester • St. Louis • St. Paul • St. Petersburg • Salt Lake City Seattle • Tulsa • Wichita

CANADA: Railway & Power Engr. Corp., Ltd.

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of Copperweld Steel Company • SHELBY, OHIO

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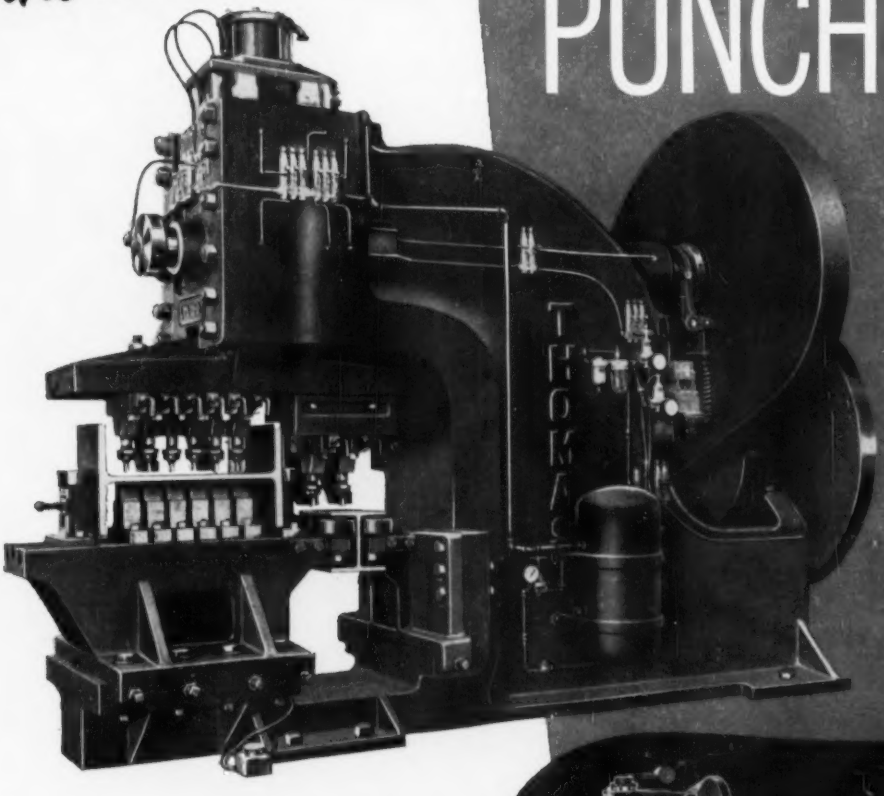
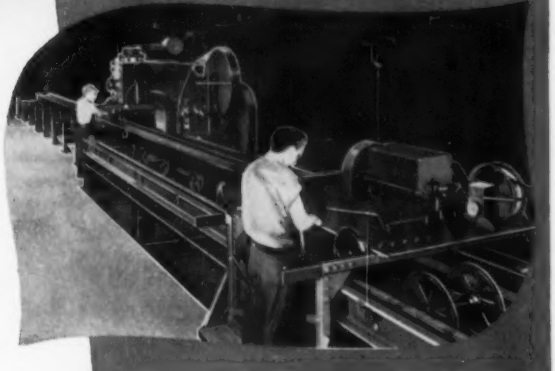
the trend is to THOMAS

for the most modern in BEAM PUNCHES



Modern design and quality construction...these are the factors required to lower your punching costs. You'll find these advantages in the Thomas line of new Beam Punches... in models of from 100 to 400 ton capacities.

Multiple tool setups for flanges and webs permit continuous operation through a wide range of sizes without money-consuming delays for tool changes. Quality construction throughout provides insurance against costly down time!



Write for details!

The Thomas Beam Punch-Motorized Spacing Table combination produces the ultimate in production efficiency for the medium tonnage shop. With the Spacing Table, accurate hole spacing is assured without layout, and material handling is reduced to the bare minimum.

THOMAS
MACHINE MANUFACTURING CO.
PITTSBURGH 23, PA.

Punches • Shears • Presses • Benders • Spacing Tables

40

When buying aluminum for your product...

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WINDOWS AND DOORS

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Every industry has one member who specializes in customer satisfaction

Your Inventory Control of aluminum coiled sheet and foil can be virtually automatic when you specify Anaconda. Our policy of custom rolling all orders to customers' specifications, coupled with extremely flexible production facilities, assures you prompt delivery at all times.

Precision production controls further assure that your Anaconda Coiled Sheet is the finest you can buy. Modern rolling mills with X-ray gauge controls give you uniform thicknesses and consistent yield per pound. Uniformity of temper is maintained, order after order. Control of grain size provides maximum workability. High-speed slitters cut exact widths, precision edges.

The Anaconda line includes gauges from .006" to .064"; widths from ⅜" to 54"; alloys: 1100, 1145, 3003, 3004, 5005, 5050, 5052, 5357. And watch for an expanding line of wrought aluminum products.

Anaconda Aluminum Foil, custom-rolled to the same high standards of quality, is available in gauges from .00023" to .0059", in widths to 54".

For action, call our nearest District Sales Office or contact us direct. For the new booklet, "Anaconda Aluminum Coiled Sheet", write Dept. A-9, 1430 S. 13th St., Louisville 10, Kentucky.

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Made by Cochran Foil Corporation
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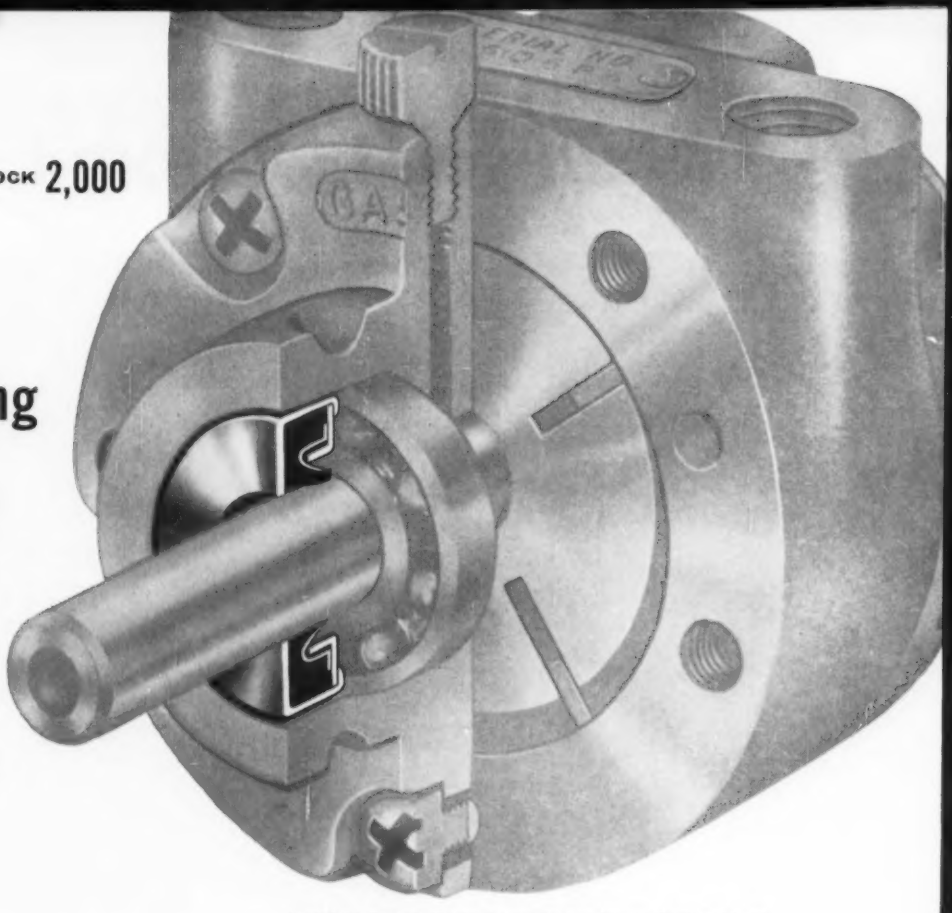
MORE ABOUT THE GARLOCK **2,000**

Standardizing on Garlock KLOZURE* Oil Seals Pays Off for Gast



Model 51 Garlock KLOZURE protects bearing on Gast Air Motor made by Gast Manufacturing Corp., Benton Harbor, Mich.

Air motors require a long-life seal which will prevent leakage without creating excessive friction. That's one reason why Gast Mfg. Corp. use Garlock KLOZURE Oil Seals on both their Air Motors and Air Pumps. These products operate under pressures to 90 and 30 psi respectively, and at shaft speeds from 1000 to 5000 rpm.

Gast engineers report excellent results with Garlock Seals.—"They outlast some other parts of our products and are easily and economically replaced during major overhauls." Gast has standardized on Garlock KLOZURES for over 25 years—They like the compact design of KLOZURES, the wide availability of replacements, and the broad choice of sizes.

You can give *your* products the "seal of quality" too—specify Garlock KLOZURE Oil Seals . . . they are part of the famous Garlock 2,000 . . . two thousand different styles of packings, gaskets, and seals to meet all your needs. Consult your local Garlock Representative or write for KLOZURE Catalog 20. Other Garlock products are described in Sweet's Product Design File.

*Registered Trademark

Other General Purpose KLOZURES

Model 53—for normal to high speeds

Model 71B—for large shafts in normal to high speed service

Model 91B—for small shafts in normal to high speed service

Model 65—for normal to high speeds

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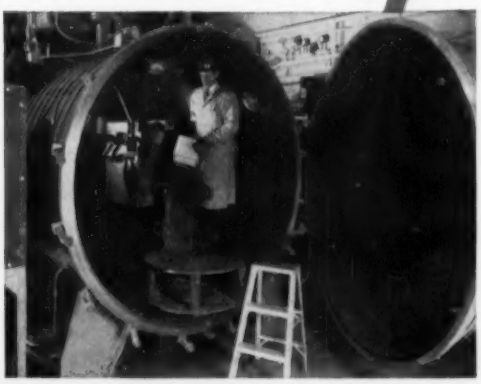
When you buy from U. S. Steel

STEEL+ PLUS IN ACTION: FACILITIES

Whether they are bullets or rockets, it takes steel to launch the missiles of defense. Shown here is the Douglas Aircraft produced Nike Hercules missile poised on a launcher fabricated at U. S. Steel's Consolidated Western Steel Division where production lines for assembly of the launcher and ground handling gear are set up. USS MAN-TEN and USS TRI-TEN High Strength Steels and USS "T-1" Constructional Alloy Steel are used in construction of the launcher.

American Bridge • American Steel & Wire and Cyclone Fence • Columbia-Geneva Steel • Consolidated Western Steel • National Tube • Oil Well Supply
Tennessee Coal & Iron • United States Steel Homes • United States Steel Products • United States Steel Supply and Gerrard Steel Strapping
Universal Atlas Cement • United States Steel Export Company

you get STEEL + PLUS



STEEL + PLUS IN ACTION: RESEARCH

To learn more about the effects of gases on the properties of steel, U. S. Steel researchers use this vacuum furnace to make experimental steels that are extremely low in gas content. Comparative tests are then made to evaluate any improvements obtained, and this information guides us in the development of new and better types of steel for many critical applications.

STEEL + PLUS IN ACTION: TECHNICAL ASSISTANCE

When the American Chain Division of American Chain & Cable Co. formed links from steel bars, links often had to be discarded due to irregularities in forming caused by variations in hardness. To stop the waste of time and steel, they asked us to supply a more ductile (and more expensive) annealed steel. USS Metallurgist Jim Culton looked into the problem and saw that a much less expensive, normalized steel would do the job just as well. The customer tried it and it proved to be the ideal material. Mr. Culton is shown here on the right talking with the manufacturer's plant superintendent, Mr. W. H. Paul.

STEEL + PLUS IN ACTION: MARKETING ASSISTANCE

Today, there is a new and more efficient method of handling milk, using refrigerated bulk milk tanks, trucks and dispensers made of stainless steel. Through farm and trade magazine advertising, nationwide television, promotional literature, direct mail and dealer sales aids, U. S. Steel told the bulk milk story to farmers, dairies, restaurants and schools throughout the country, creating countless prospects for manufacturers of this type of equipment. As in this case, USS Marketing Assistance often speeds the acceptance of new ideas and new products of vital concern to our customers.

USS, "T-1," Man-Ten and Tri-Ten are registered trademarks

USS United States Steel

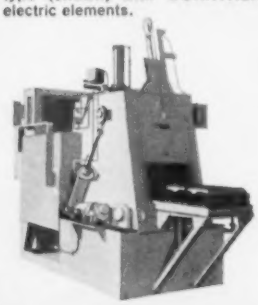
Wherever industry needs heat...

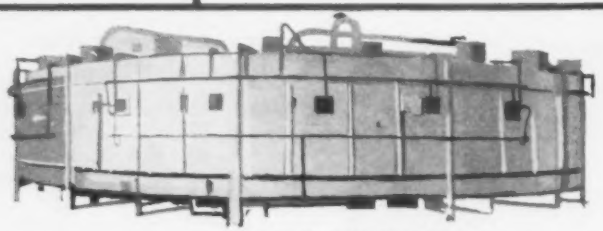
You'll find *LINDBERG* equipment just right for the specific job

Pilot Plant Equipment: Atmosphere tube unit (shown) for processing work at temperatures to 2200° F.

Roller Hearth Furnaces: Continuous electric type (shown) with temperature range 1300° to 2100° F.

Automatic Carbonitriding Furnaces: Automated integral quench type (shown) with CORRTHERM electric elements.



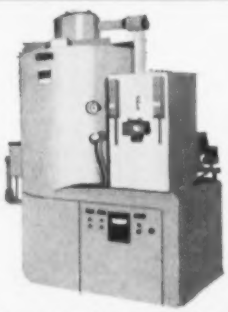


Rotary Hearth Furnaces: Doughnut type field-installed gas-fired furnace (shown) with capacity of 13,000 lbs. per hour.

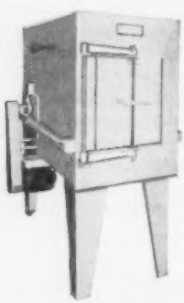
Vertical Type Furnaces: Carburizing and hardening furnace (shown) with CORRTHERM electrical heating elements.

HF Induction Heating Units: Available in 5, 10, 25 and 50 KW units.

Ceramic Kilns: Gas-fired periodic kiln (shown) with temperature range to 3250° F.

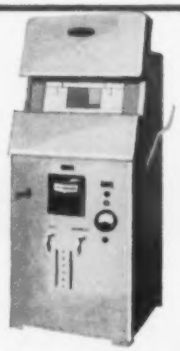


Atmosphere Generators: Hyen generator (shown) for endothermic atmospheres. Generators for all required atmospheres.



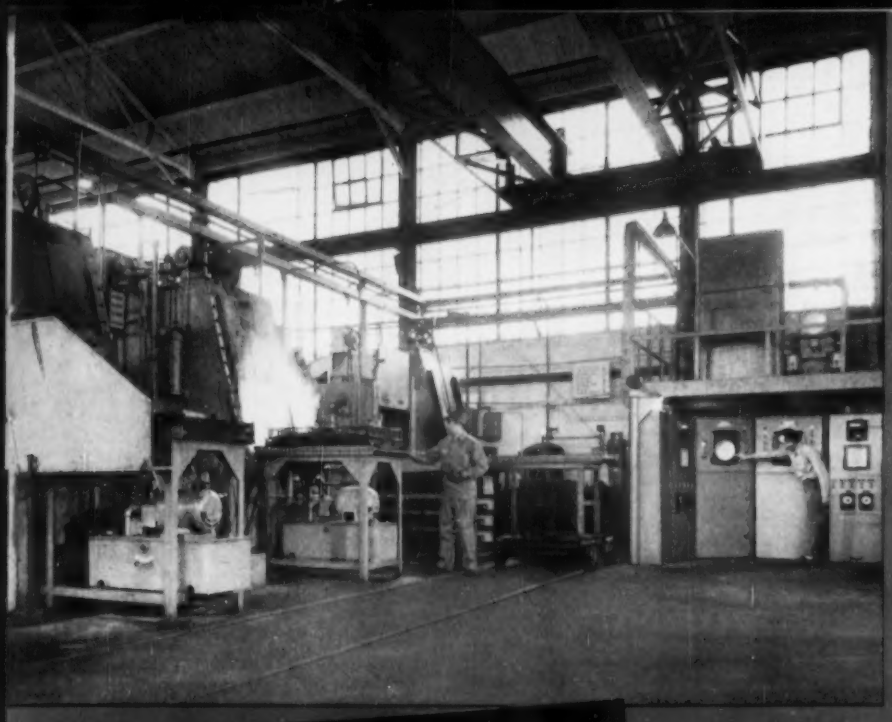
Tempering Furnaces: Box type Cyclone (shown). Temperature range to 1250° F.

Melting and Holding Furnaces: Electric resistance furnace (shown) with capacities of 750 lbs. to 1500 lbs.



Laboratory Equipment: One-unit box furnace (shown), muffle or for non-oxidizing atmosphere with temperature range to 3000° F.

Aluminum Reverberatory Furnaces: Twin-chamber melting and holding furnace (shown) with 45,000 lbs. capacity.



Lindberg-Designed

Charles Hewitt, President of Dayton, says, "The Lindberg installation has kept our production at a consistently high quality level."

Work loads are positioned manually, but entire furnace operation is fully automatic.

Unique Installation Cuts Heat Treating Costs and Improves Quality at Dayton

Here is a remarkable set-up for general heat treating now in operation at Dayton Forging & Heat Treating Company, Dayton, Ohio. Two integral quench atmosphere furnaces, largest of this type ever built by Lindberg, and one atmosphere tempering furnace in a "three-in-a-row" arrangement that simplifies transfer operation. Combined with Lindberg Carbotrol and Hyen generator, the entire furnace operation is completely automatic, including atmosphere control and recording. Planned by Dayton and Lindberg engineers, the installation runs around the clock, six days a week, reducing costs and producing cleaner end products, brighter job finish, freedom from "decarb" and a consistently higher quality of work.

This is another example of how Lindberg equipment and Lindberg planning can help you find the most effective answer to any problem of applying heat to industry. We cover the field, heat treating, melting and holding, tempering, brazing, enameling furnaces, ceramic kilns, high frequency units, and are in the ideal position to recommend just the type of equipment most suitable for your needs. This can be factory built or field-installed in your own plant, fuel-fired or electric, whatever is best suited to your production processes. Consult your local Lindberg Field Representative (see the classified phone book) or get in touch with us direct. Lindberg Engineering Company, 2452 West Hubbard Street, Chicago 12, Illinois. Los Angeles Plant: 11937 S. Regentview Avenue, at Downey, California.

Lindberg Carbotrol unit automatically controls and records "dew point" and heating cycles of endothermic atmosphere.

Lindberg's "dimple" vertical radiant tubes give remarkably trouble-free service and function at all times at full efficiency.

LINDBERG heat for industry

Is direct labor a high percentage of production cost?
Would an increased production rate lower cost?
Is machine "idle time" for part loading and unloading high?
Does operator fatigue influence product quality?

IF YOU ANSWER "YES" TO ONE OF THESE FOUR QUESTIONS BELLOWS SPOT-A-MATION WILL PAY OFF QUICKLY

- What is SPOT-A-MATION? It's applying automation principles to separate manufacturing operations by the use of Bellows "Controlled-Air-Power" Work Units.

These pneumatic powered devices can be quickly installed on standard machines to make them fully automatic; they can be used to combine or couple an operation with a preceding or following one; they can form the key units in low cost, toolroom-built, special purpose machines . . . they can be used to automate a single machine, or an entire department . . . and, nine times out of ten, will pay for themselves in the first few weeks of operation.

Free!

SPOT-A-MATION PORTFOLIO

Schematic layouts, wiring diagrams, photos showing simple ways to automate standard machines. Free on request. Write Dept. IA 958, The Bellows Co., Akron 9, Ohio. In Canada: Bellows Pneumatic Devices of Canada, Ltd., Toronto 18.

The Bellows Co.
DIVISION OF INTERNATIONAL BASIC ECONOMY CORPORATION
AKRON 9, OHIO

1195-B

One of Claymont's multi-torch automatic flame-cutters.

by d'Arazien

Main feature of the Claymont story is integration. For instance, consider one phase of our operation—the new Fabrication Shop. First, steel from Claymont's own open hearth is formed into plate on Claymont's own rolling mills and sent to the Fabrication Shop. Here, modern equipment welds, shears, presses, rolls, cuts or machines the plate to produce fabricated products for many industries.

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Whether equipped with multi-station feed for automatic production or doing custom work, Cleveland Knuckle Joint Presses exert a short but extremely powerful squeeze on the metal through massive, carefully fitted knuckles operating on shafts of hammered steel forgings.

Greater accuracy of production is obtained with these Cleveland Presses due to the long slide bearing surfaces and rugged frame construction featuring four massive tie rods. These control slide deflection to a minimum even under maximum load.

With capacities from 150 to 3000 tons and bed areas from 18 x 18" to 50 x 54", Cleveland Knuckle Joint Presses are engineered to do the job efficiently, economically. Investigate the cost-cutting advantages of these Cleveland Presses by writing for Catalog K2 today.

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Established 1880

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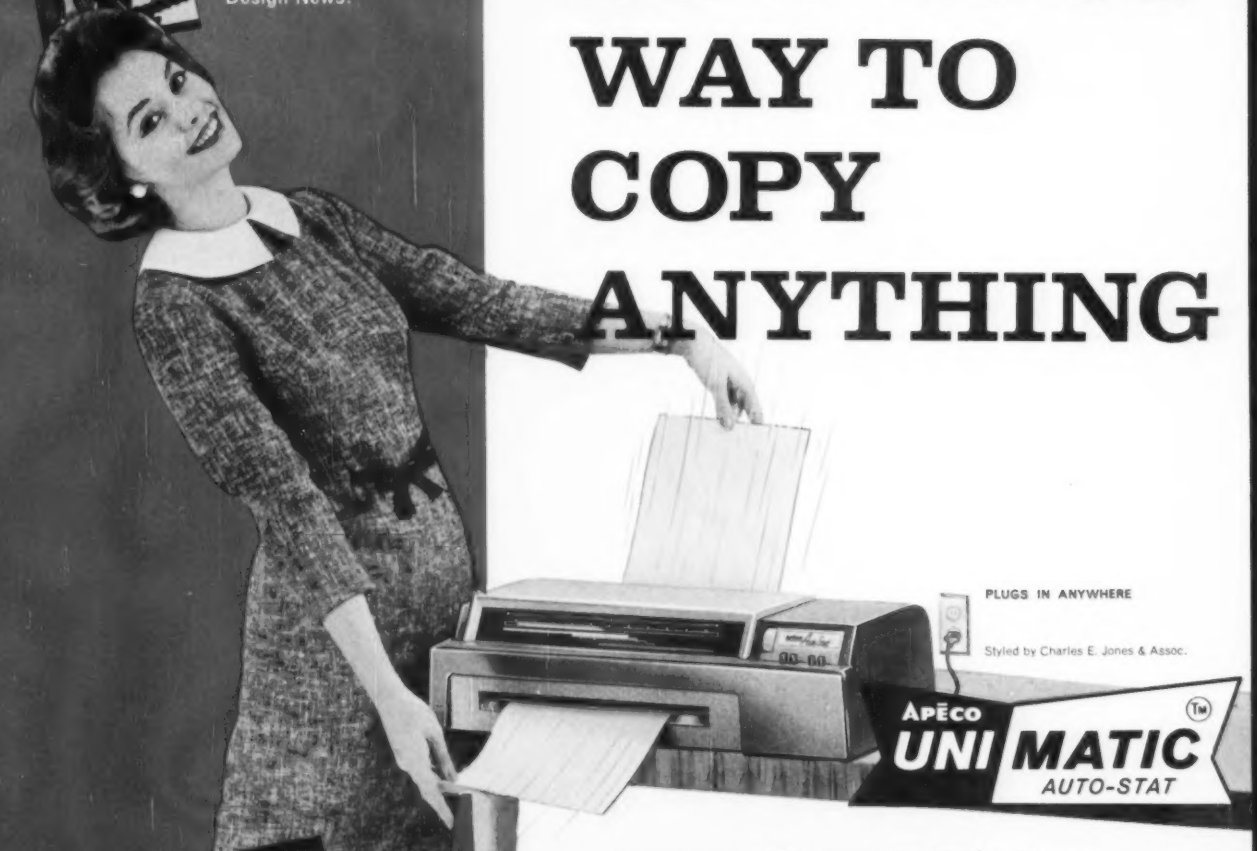

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LIMA

These three users find LIMA tops in flexibility, speed and dependability

Like hundreds of others across the nation, these three typical crane users find Limas ideal for outside materials handling. They find Limas give smooth, precise lifts, move swiftly, stay on the job year in, year out with a minimum of maintenance.

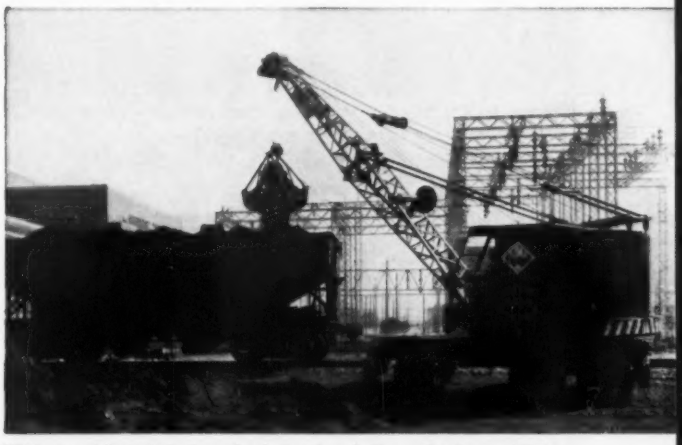
Check these Lima quality features: Moving parts flame or induction hardened for longer life; weight distributed for maximum stability; anti-friction bearings at all important bearing points; big-capacity drums and sheaves that are easy on cables; propel and swing gears and power take-off enclosed in a sealed oil bath; torque converter (optional).

Mounted on rubber for maximum mobility, Limas are available in capacities up to 70 tons and will go anywhere a truck will go at speeds up to 25 mph. If mobility is not a factor in your operation, you can get crawler-mounted Lima cranes that will handle loads up to 110 tons. And readily interchangeable front end attachments—magnet, shovel, dragline and pullshovel—give Limas the versatility to handle any of your heavy lifting and digging jobs.

Get the complete Lima story from your nearby distributor or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

Lima Type 44 Magnet Crane handling scrap in the yard of City Scrap Iron and Metal Co., Detroit. The owners say: "The purchase of this machine was based upon its outstanding capacity for long boom work with the 45-in. magnet, also upon the very economical and efficient service received from a Type 101 Lima which we bought a good many years ago . . . We consider the new Type 44 the finest machine for our type of operation that we know of."



With a quick switch from hook to clamshell on the boom, Philadelphia Electric Co.'s three Limas can handle anything from loading slag or ashes to lifting bushings from transformers during repair work. They give constant peak performance with maximum flexibility, low maintenance and high availability.

Lima Type 44 Magnet Crane, one of three Limas working for Pevin Iron & Metal Co., Detroit. Pevin says: "The metal business is based on quick handling and turnover of scrap materials. As timing is very important, we have found it most satisfactory to buy Lima machines, due to their dependability and capacity. It is our opinion, after 25 years of operation, that Lima cranes are unequaled in low maintenance and outstanding performance."

LIMA SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

BALDWIN-LIMA-HAMILTON

Construction Equipment Division—LIMA WORKS

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Quick Service from Distributor's Stock!

• Your nearby ACCO Authorized Sling Chain Distributor now offers a new sling service that saves time and money for you. This is made possible by American Chain's sensational, newly-designed **ACCOLOY KUPLEX Sling Chains.**

SAFE, STRONG, STREAMLINED

These slings are the *latest and greatest development* in sling chains. All parts in each leg are manufactured *exclusively* by American Chain, of the same alloy, and engineered to be as strong as the chain itself. They are of a streamlined design that reduces the possibility of catching or snagging.

Finally the component parts are factory proof-tested to twice the working load limits—your assurance of maximum strength and safety.

Another valuable feature: all parts remain visible for easy, periodic wear inspection.

TWO STYLES—SIX SIZES

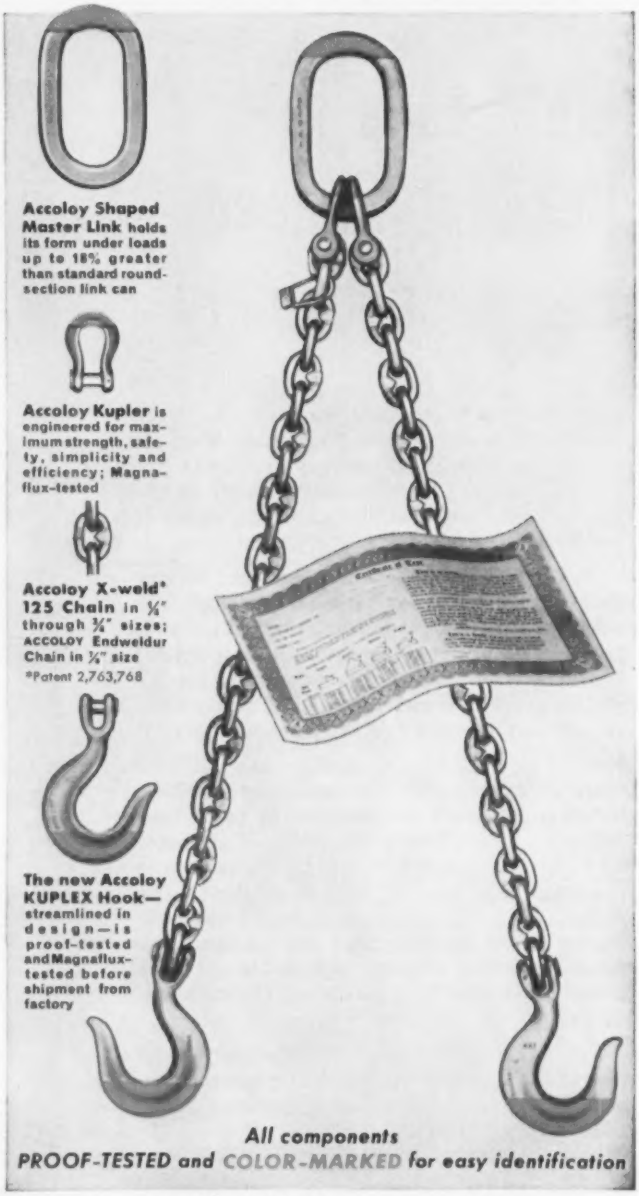
The new ACCOLOY KUPLEX Sling Chains are available in single-leg and two-leg styles and in six chain sizes, from ¼" through ⅞". All chain is made of Accoloy 125 material. All component parts of each assembly are marked and easily identified as to the size of chain with which they are to be used. Components are *color-marked in* orange for easy identification.

CERTIFICATE OF TEST, issued by ACCO and signed by your Authorized Distributor, is furnished with each sling shipment.

GET THE COMPLETE STORY

You will find it to your advantage to get the full story of ACCOLOY KUPLEX Sling Chains. Learn how promptly they can be serviced . . . how easily repairs or parts replacement can be made, should they ever become necessary . . . and how you can benefit from this Great New Distributor Service and this Great New Sling Chain.

Write for **Folder DH-39** and name of nearest ACCO Authorized Sling Chain Distributor.



Accoloy Shaped Master Link holds its form under loads up to 18% greater than standard round-section link can

Accoloy Kuplex is engineered for maximum strength, safety, simplicity and efficiency; Magnaflux-tested

Accoloy X-weld* 125 Chain in ¼" through ⅝" sizes; ACCOLOY Endweldur Chain in ¾" size

*Patent 2,763,768

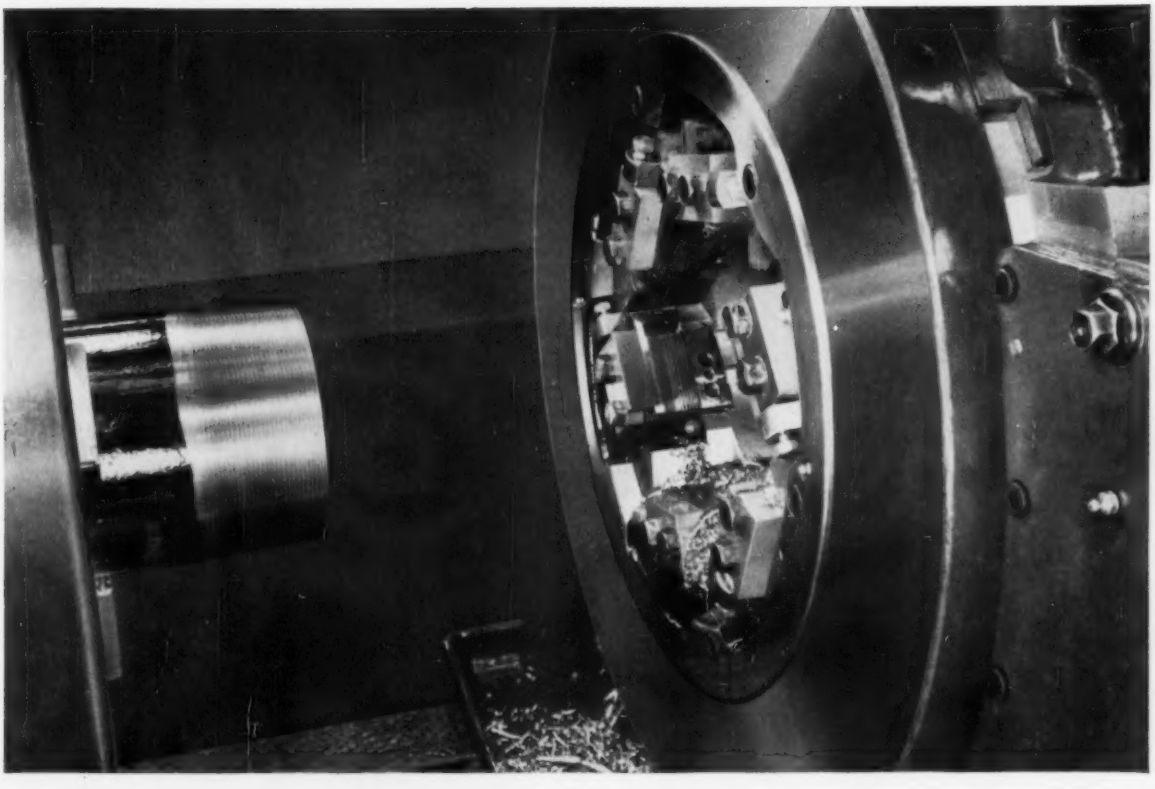
The new Accoloy KUPLEX Hook—streamlined in design—is proof-tested and Magnaflux-tested before shipment from factory

All components
PROOF-TESTED and COLOR-MARKED for easy identification

American Chain Division
AMERICAN CHAIN & CABLE
Bridgeport, Conn. • Factories: *York and *Braddock, Pa.

Sales Offices: *Atlanta, Boston, *Chicago, *Denver, Detroit, *Houston, *Los Angeles, New York, Philadelphia, Pittsburgh, *Portland, Ore., *San Francisco

***Indicates Warehouse Stocks**



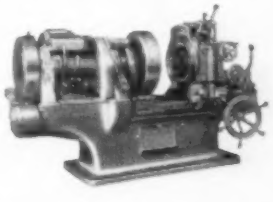
LARGE TEXAS SHOP USES LANDIS PIPE MACHINES *Exclusively . . . .*

TEN LANDIS Receding Chaser Pipe Threading Machines are used by Atlas Pipe, Inc., largest mill-type pipe finishers on the Gulf Coast, for threading oil tubular goods.

These machines are installed in an offset position so as to permit uninterrupted production. Typical production figures show: the 4¾" machines threading 74 joints (148 threads) per hour from 2⅜" upset tubing—the 8⅝" machines averaging 20 joints (40 threads) per hour from 5½" casing. All threads are 8 pitch to API standards.

Mr. Becker, Plant Manager, highlights the important production advantages of LANDIS Pipe Machines when he says that they were selected for their flexibility, versatility, and the uniform threads produced. Thread uniformity is made possible by massive construction, leadscrew control of the carriage movement, a precision-built die head featuring LANDIS Tangential Chasers, and an attachment which mechanically controls the degree of taper.

These machines offer flexibility through wide range coverage—three sizes of machines (4¾", 8⅝", 13⅜") thread all pipe sizes from 1⅝" to 13⅜". Ease of set-up is also important — a change of diameter and length in less than two minutes, a complete change for diameter, pitch, taper, and length in 40 minutes.



LANDIS Receding Pipe Machines perform four other pipe fabricating operations in addition to threading: cutting off, chamfering, reaming, and the making and breaking of collars. For more information, write for Bulletin C-77.

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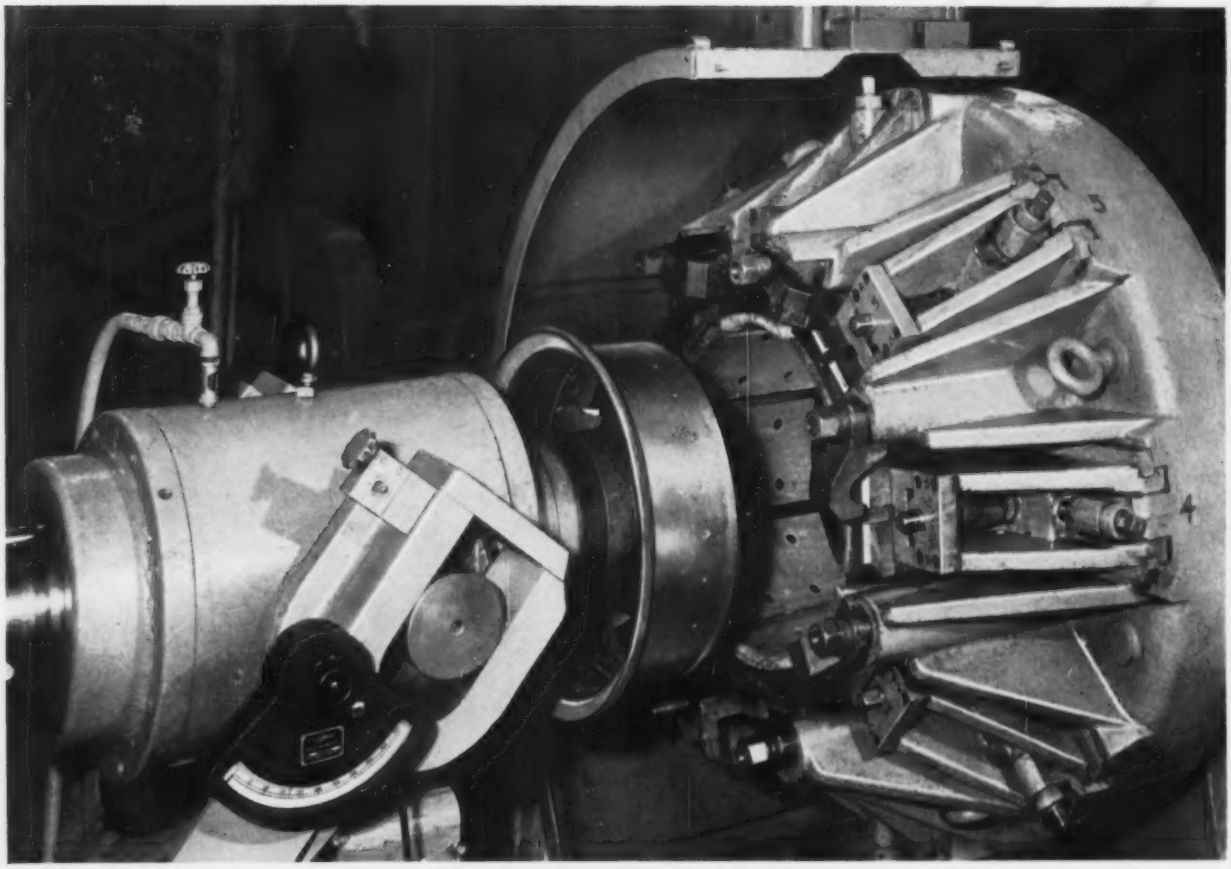
LANDIS *Machine* COMPANY · WAYNESBORO PENNSYLVANIA

THE WORLD'S LARGEST MANUFACTURERS OF THREAD GENERATING EQUIPMENT



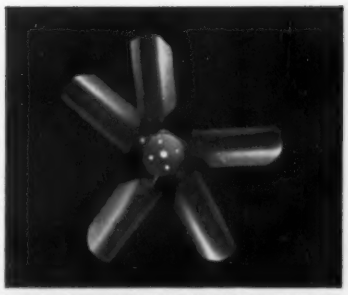
This fatigue life testing machine at The Budd Company, Detroit, puts steel products through a rugged workout. Here lightweight truck wheels of N-A-X HIGH-TENSILE *steel are subjected to constant flexing, hour after hour. Tests like this prove* N-A-X HIGH-TENSILE *adds fatigue life, permits sizable weight reductions.*

For whatever you make . . .

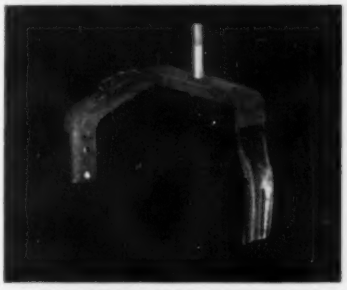
N-A-X® HIGH-TENSILE STEEL ADDS GREATER FATIGUE LIFE

plus excellent formability–weldability–toughness

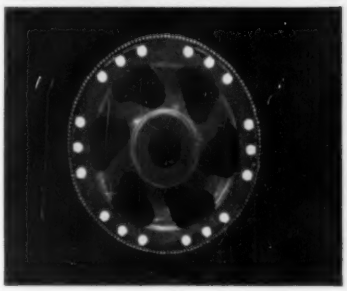
Rotating speeds and vibrations create excessive fatigue in engine fan blades. With its superior fatigue resistance, N-A-X HIGH-TENSILE *is specified in many fan constructions.*



Because high fatigue resistance is a critical requirement of motor mounts, N-A-X HIGH-TENSILE *is specified by leading manufacturers.*



Under simulated field conditions, fatigue life tests proved flex plates made of N-A-X HIGH-TENSILE *lasted up to* ten *times longer than those made of carbon steels of the same gage.*



The trucking industry and its suppliers have always looked for ways to build trucks lighter for bigger payloads, without sacrificing durability and strength.

The Budd Company found that with N-A-X HIGH-TENSILE steel, wheel weight could be cut substantially *with no loss* in fatigue life. Long experience proves that despite their lighter weight, N-A-X HIGH-TENSILE truck wheels stand up, take stress and flexing mile after mile.

The Budd Company also found that along with greater fatigue life, weight for weight, N-A-X HIGH-TENSILE offers important advantages in manufacturing. N-A-X HIGH-TENSILE welds and forms readily. And just as important for Budd customers, N-A-X HIGH-TENSILE because of its toughness resists impact to an exceptionally high degree.

CHECK THESE IMPORTANT ADVANTAGES FOR YOUR JOB:

N-A-X HIGH-STRENGTH steels—both N-A-X HIGH-TENSILE and N-A-X FINEGRAIN—compared with carbon steel, are 50% stronger • have high fatigue life with great toughness • are cold formed readily into difficult stampings • are stable against aging • have greater resistance to abrasion • are readily welded by any process • offer greater paint adhesion • polish to a high luster at minimum cost.

Although N-A-X FINEGRAIN'S resistance to normal atmospheric corrosion is twice that of carbon steel, N-A-X HIGH-TENSILE is recommended where resistance to extreme atmospheric corrosion is important.

For whatever you make, from steel shop boxes to steel wheels, with N-A-X HIGH-STRENGTH steels you can design superior performance, longer life and less weight into your products. Let us show you how.

N·A·X HIGH-STRENGTH STEELS

Product Development Division, Dept. A-7

GREAT LAKES STEEL CORPORATION

Detroit 29, Michigan • Division of

NATIONAL STEEL CORPORATION

Product Development Division, Dept A-7
Great Lakes Steel Corporation, Detroit 29, Michigan

☐ Please send me 12-page illustrated technical catalog on N-A-X HIGH-STRENGTH steels.

☐ Please have your representative contact me.

Name_____ Title_____

Company_____

Street_____

City_____ Zone____ State_____

AVAILABLE NOW

from selected distributors

NICHOLSON HACKSAW AND BAND SAW BLADES

Nicholson Hacksaw and Band Saw Blades and Ground Flat Stock are now available through selected distributors.

The new full line of Nicholson Hacksaw Blades includes standard steel hand blades, and hand and power hacksaw blades in high-speed steel.

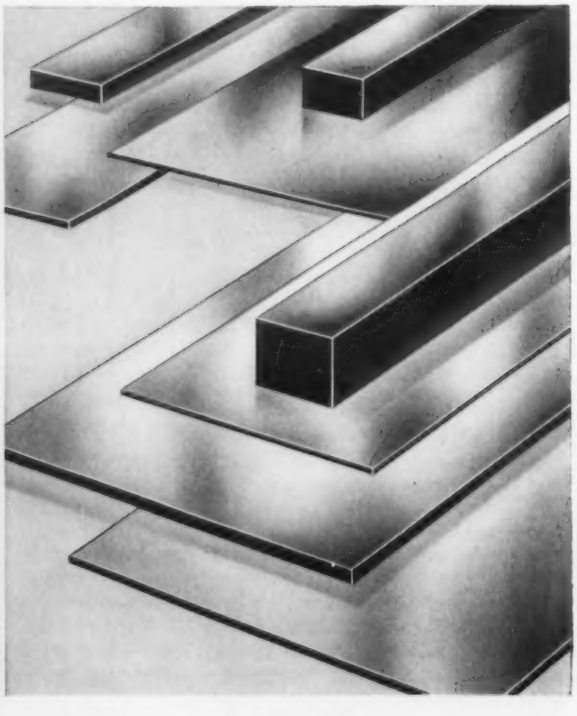
Our Band Saw Blades include a complete range of blades for general and specialized cutting. Every blade with the Nicholson trademark is designed and tested for performance perfection. You can rely on them for best results at lowest cost—just as you have always depended on files bearing our trademarks.

NICHOLSON GROUND FLAT STOCK

Nicholson precision-ground Flat Stock is available in over 1000 sizes of carefully annealed, expertly machined Stock in attractive, protective packages. Every Nicholson Flat Stock package bears the steel analysis and heat-treating procedure for its contents.

Ask your Industrial Distributor about these new Nicholson lines

✻ Industrial Distributors provide the finest goods and services in the least possible time. Our products are sold exclusively through them.



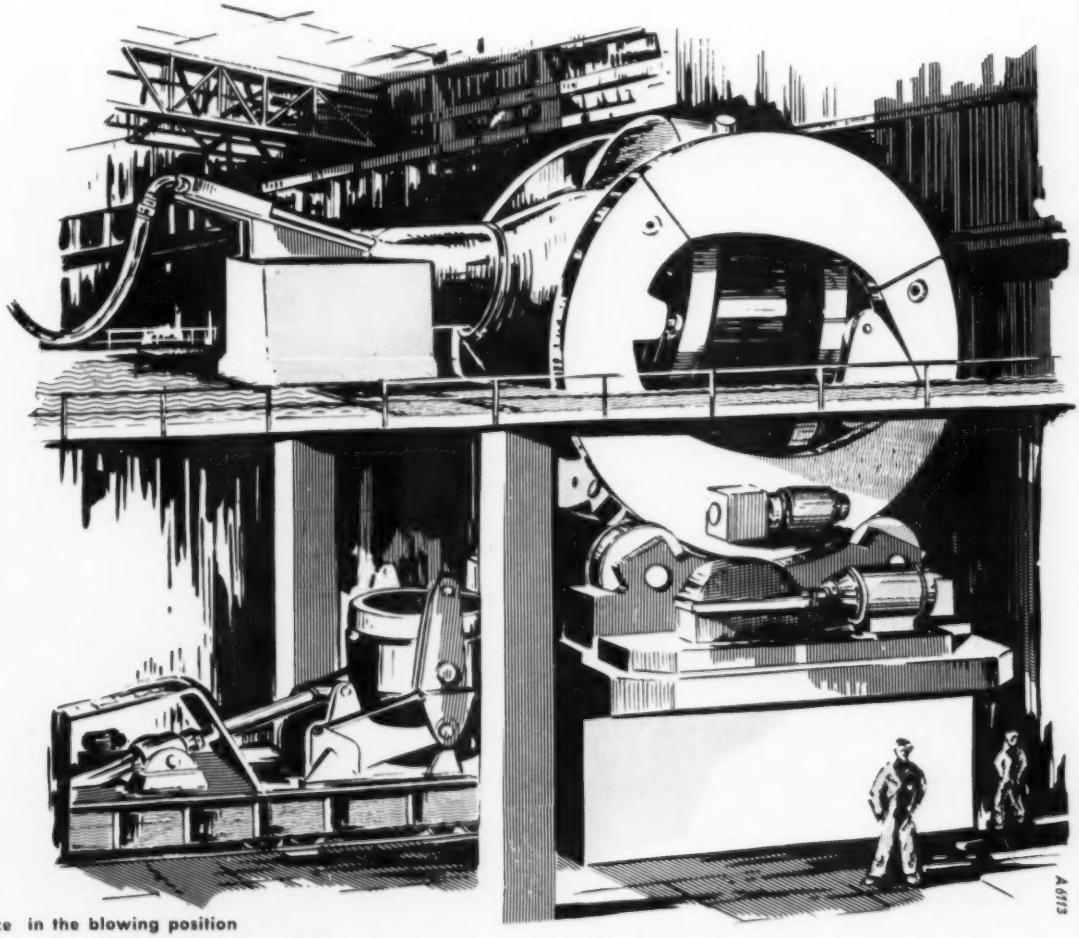
NICHOLSON U.S.A.

NICHOLSON FILE COMPANY, PROVIDENCE, R.I.

(In Canada: Nicholson File Company of Canada Ltd., Port Hope, Ontario)

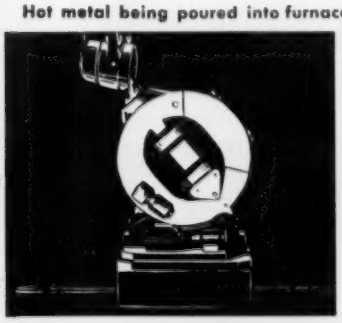
DEMAG

DEMAG is building 100-ton Kaldo furnace plant with exchangeable converter vessels for France.

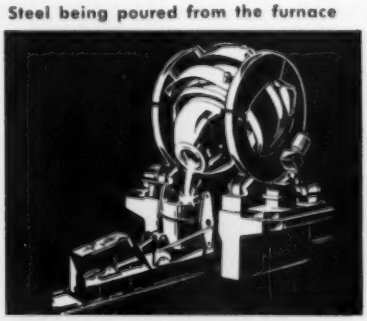


Furnace in the blowing position

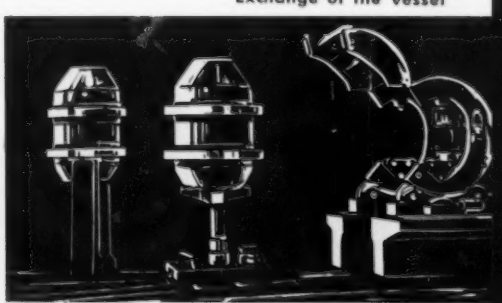
Hot metal being poured into furnace



Steel being poured from the furnace

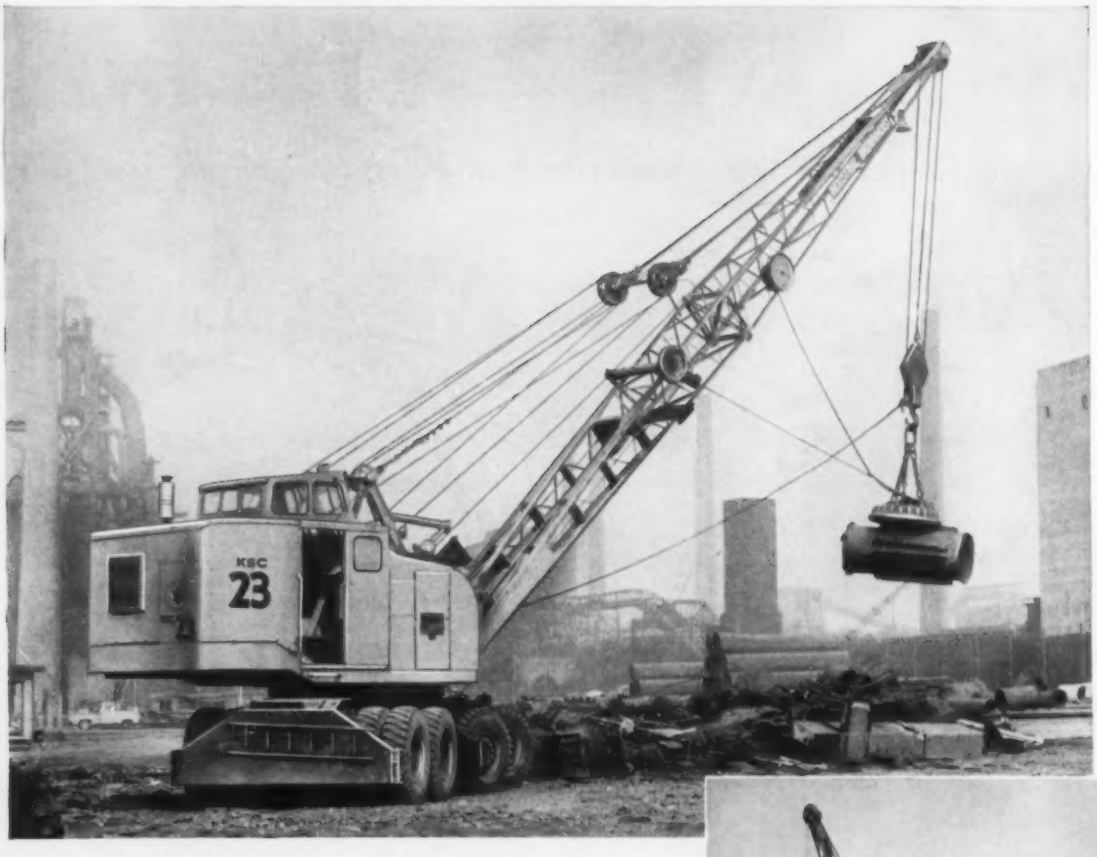


Exchange of the vessel



U. S. REPRESENTATIVE: AMERICAN DEMAG CORPORATION Pittsburgh 22, Pa., One Gateway Center.

DEMAG AKTIENGESELLSCHAFT DUISBURG GERMANY



ALL PARTS ARE INTERCHANGEABLE

on Brownhoist's Diesel Electric Locomotive and Wagon Cranes

The 50 Ton Diesel Electric Wagon Crane and the 50 Ton Diesel Electric Locomotive Crane pictured here are two of several Industrial Brownhoist heavy-duty cranes operated by Kaiser Steel Co. at their huge plant in Fontana, California. Although these cranes operate at peak efficiency on a variety of rugged, daily jobs, it sometimes becomes necessary to replace parts. With Industrial Brownhoist cranes, either locomotive or wagon, part replacement is both swift and economical for every part is *interchangeable* from the car body up. The number of parts in your stock can be cut in half and down time for part replacement can be virtually eliminated.

If you need both a wagon crane and a locomotive crane for the heavy-duty jobs around your plant, get Industrial Brownhoist cranes. You, too, will benefit from the interchangeability of parts and such high performance features as exclusive 360-degree monitor-type cab, clear-vision boom, straight line power train and electric rotation for fast operation. Write for further information today.

208

BROWNHOIST

CLAMSHELL BUCKET

250 TON WRECKING CRANE

COAL-ORE BRIDGE

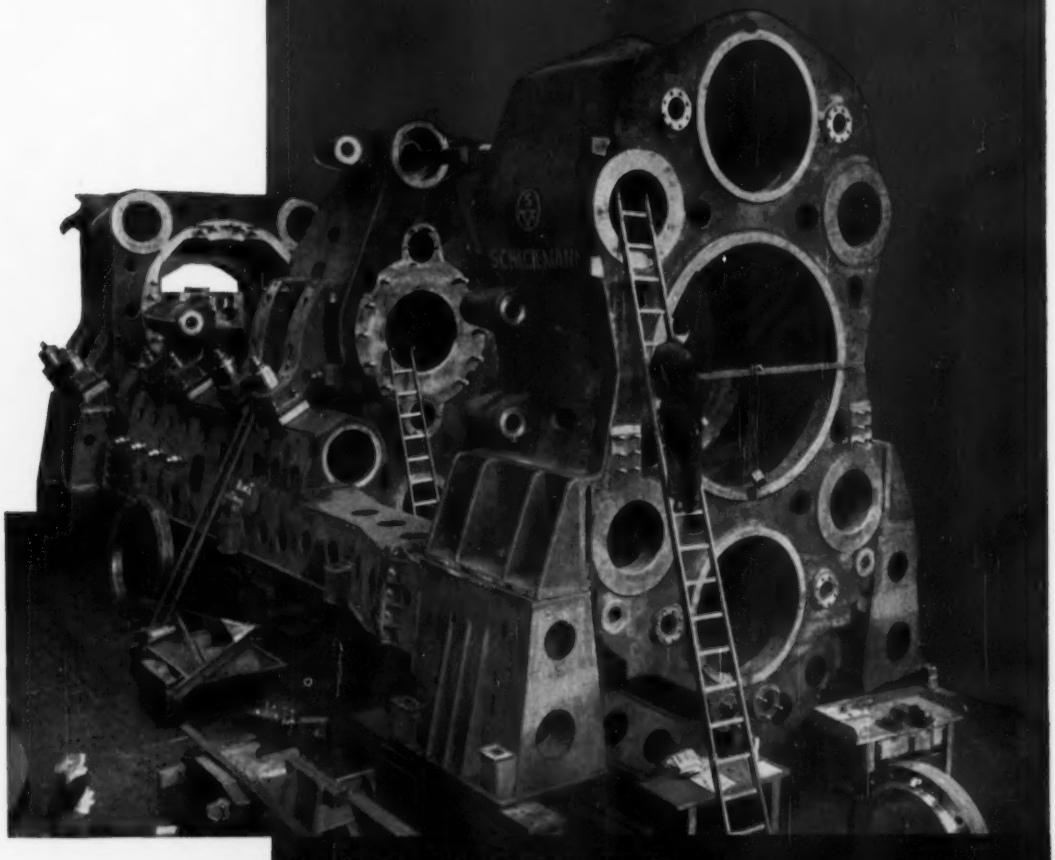
CAR DUMPER

LOCOMOTIVE CRANE

INDUSTRIAL BROWNHOIST CORPORATION • BAY CITY, MICHIGAN • DISTRICT OFFICES: Cleveland, Philadelphia, Chicago, San Francisco, Montreal.

• **AGENCIES: Detroit, Birmingham, Houston**

SCHLOEMANN

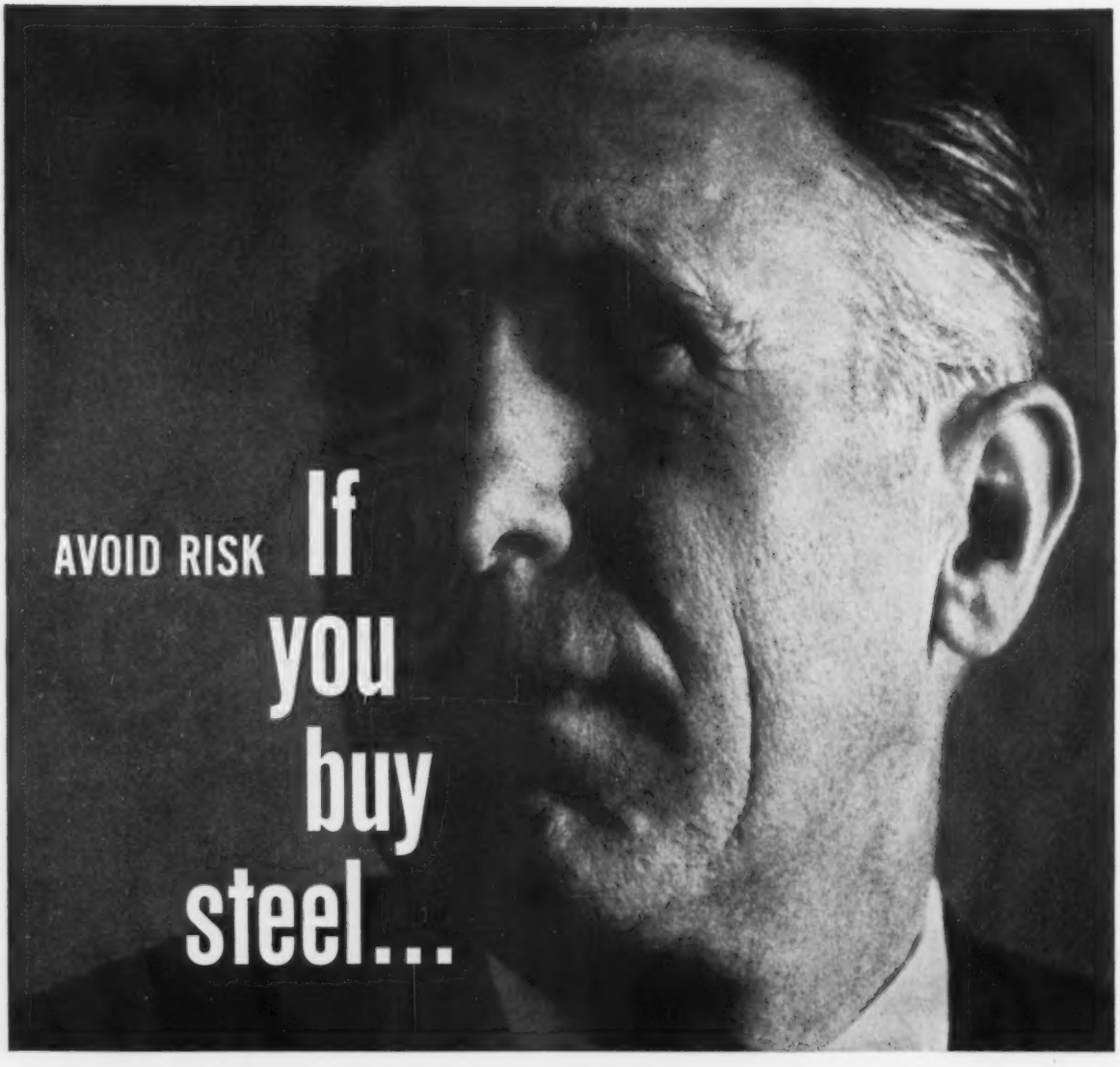


Another 14,000 ton Extrusion Press

About thirty years ago, SCHLOEMANN pioneered the concept of providing the light metal industry with giant presses. Designers were soon able to utilize forged and extruded pieces of sizes hitherto unobtainable and of low weight and high tensile strength. Thus, the prerequisites were created for new achievements in many fields. For example: On a SCHLOEMANN extrusion press for tubes and rods – the biggest in the world – aluminum billets up to 2.5 tons are extruded into sections for airplane construction, and these sections afford a saving in weight of up to 80 per cent compared with conventional sections fabricated by rivetting or welding methods. The picture shows a 14,000 ton extrusion press during erection in the shops. This is the second press of this size which has been built by SCHLOEMANN for Aluminum Company of America.

FELLER ENGINEERING COMPANY 1190 Empire Building, Pittsburgh 22, Pa.

ROLLING MILLS FOR FERROUS AND NON-FERROUS METALS • COUNTERBLOW HAMMERS • HYDRAULIC PRESSES



USE OUR CAPITAL to cut your storage space costs

Using our large steel stocks saves you the costs of a big chunk of expensive storage space. And you can free-up and convert this tied-up space to more productive, profitable use. That's good business.

Since our labor, our equipment cuts your steel, does preliminary processing for you . . . you save the investment—the costs—of using your own labor and equipment. You save handling expense and other inventory costs. Whatever your steel need, there's a nearby Steel Service Center set up to serve you quickly from stock.

If you're putting steel in your inventory because you think it's a bargain, compare *all* of your costs of possession with the cost and *freedom-from-risk* of buying steel from your Steel Service Center. Use this chart. Or, to be more precise, get the booklet, "What's your real cost of possession for Steel" from your convenient Steel Service Center. American Steel Warehouse Association, 540 Terminal Tower, Cleveland 13, O.

COST OF POSSESSION FOR STEEL IN YOUR INVENTORY

Per ton delivered	_____
Cost of capital:	
Inventory	_____
Space	_____
Equipment	_____
Cost of operation:	
Space	_____
Materials handling	_____
Cutting & burning	_____
Scrap & wastage	_____
Obsolescence	_____
Insurance	_____
Taxes	_____
TOTAL	_____

COST OF FREEDOM-FROM-RISK STEEL FROM YOUR STEEL SERVICE CENTER

Per ton, cut-to-size, and delivered	
TOTAL	_____

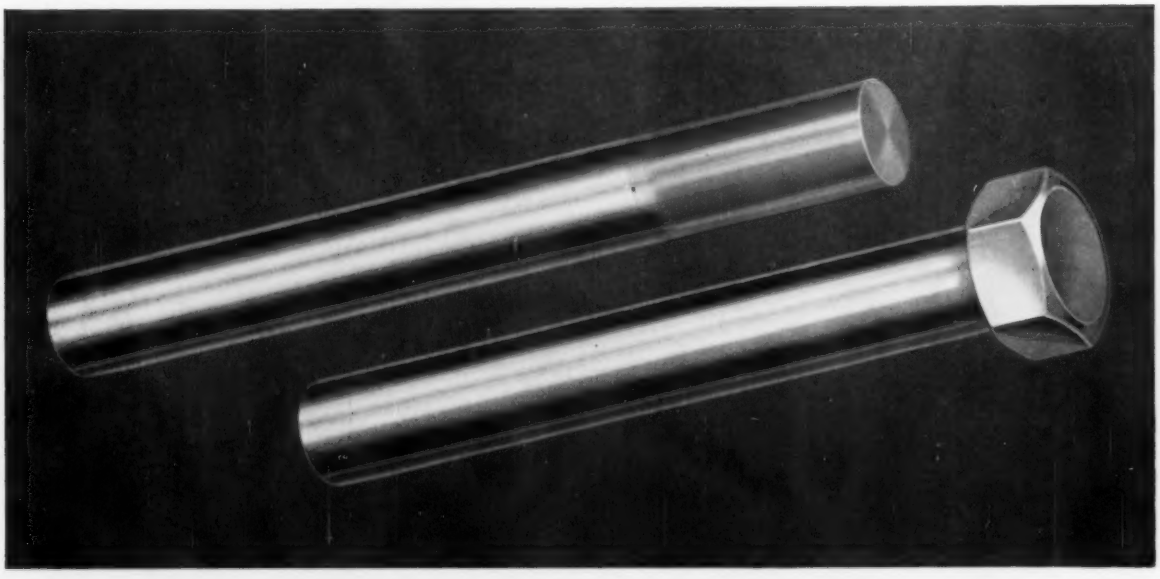
AMERICAN STEEL WAREHOUSE ASS'N

The American Steel Warehouse

...YOUR STEEL SERVICE CENTER

Die Life Increased Up To 400%

with TOCCO Induction Heating*



• Naval Bronze, Silicon Bronze, Copper, Aluminum, Monel and all types of stainless steel are heated for forging at the H. M. Harper Co., Morton Grove, Illinois. Regardless of material TOCCO can be profitably applied to brazing, heat-treating and forging operations in almost any metal-working plant.

Production Up—In addition to the very important savings in forging dies, TOCCO has increased production to as much as 265% of output possible with former heating methods. On the 1" type 303 Stainless machine bolt blanks shown here TOCCO upped production from 75 to 200 parts per hour, using 35 K. W., 10,000 cycles.

Versatile—The same TOCCO machine is used on stock of ⅜" to 1¼" diameter; heated zones vary from ⅛" to 4". TOCCO'S automatic timing cycles provide complete uniformity of heating throughout both length and cross section—assuring a uniformly high quality product.

Why not have a TOCCO Engineer investigate your plant to determine where TOCCO can cut your costs and streamline your production?

THE OHIO CRANKSHAFT COMPANY

Mail Coupon Today—NEW FREE Bulletin

The Ohio Crankshaft Co. • Dept.: A-9, Cleveland 5, Ohio

Please send copy of "Typical Results of TOCCO Induction Heating for Forming and Forging".

Name_____

Position_____

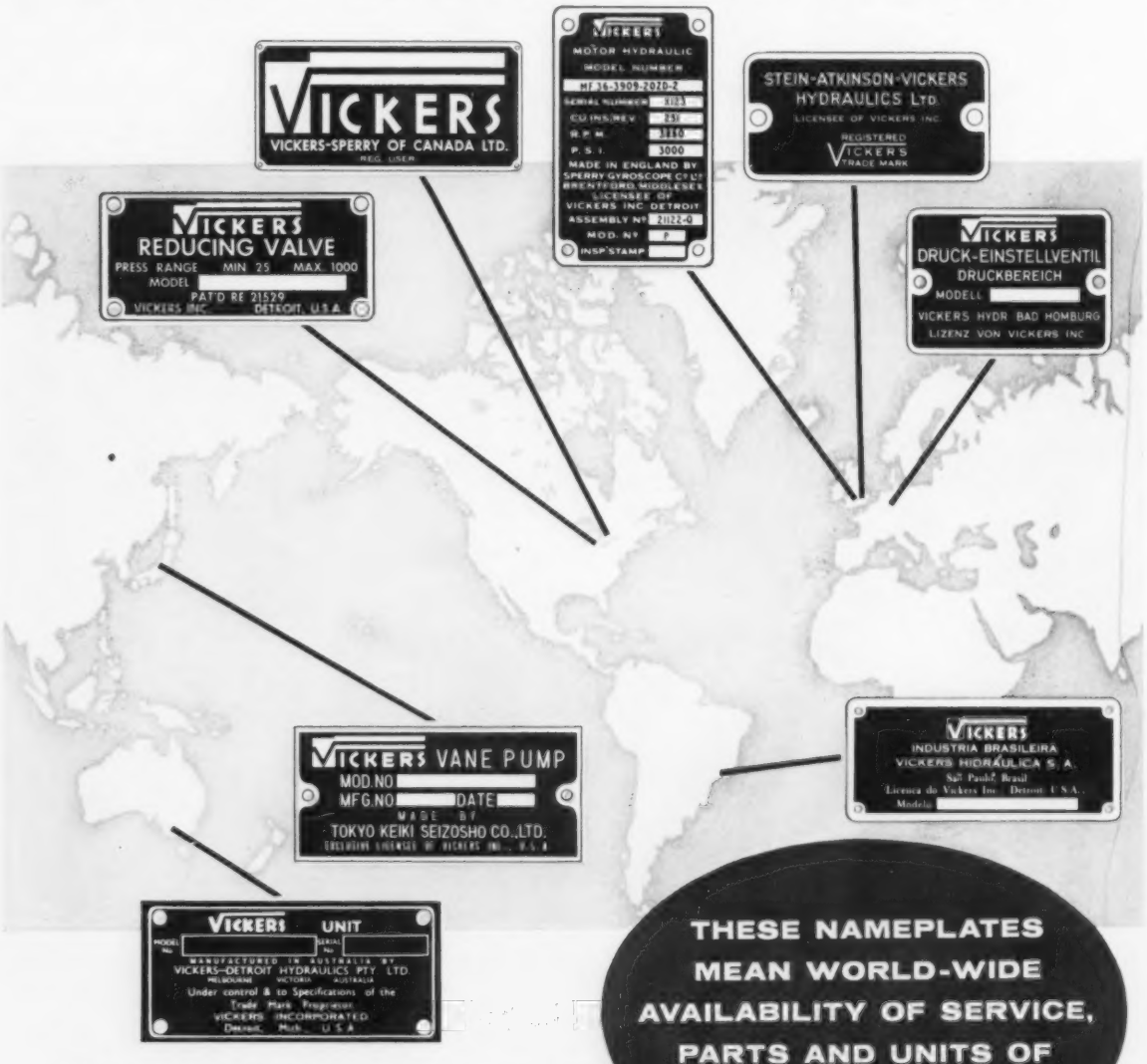
Company_____

Address_____

City_____ **Zone**____ **State**_____

VICKERS® OIL HYDRAULICS

BUILT AROUND THE WORLD



THESE NAMEPLATES MEAN WORLD-WIDE AVAILABILITY OF SERVICE, PARTS AND UNITS OF CONSISTENT QUALITY

When you use Vickers hydraulics, you can send your machinery almost anywhere in the free world with assurance that consistent quality service units will be available.

Vickers manufacturing facilities, as indicated by the nameplates above, are strategically located convenient to industrial centers around the world. Vickers consistent quality and parts interchangeability are maintained through a systematic program of inspection and test by the parent organization. Any component built in one plant will be compatible with components and systems from all other plants.

These are added advantages to you when you specify Vickers hydraulics on your machinery for export or for your machinery built overseas.

FOR FURTHER INFORMATION PLEASE WRITE FOR BULLETIN 5500

VICKERS INCORPORATED
Division of Sperry Rand Corporation
INTERNATIONAL DIVISION
Administrative & Engineering Center
Detroit 32, Michigan

8045

Manufacturing, Sales and Service in: AUSTRALIA • CANADA • ENGLAND • GERMANY • JAPAN • UNITED STATES
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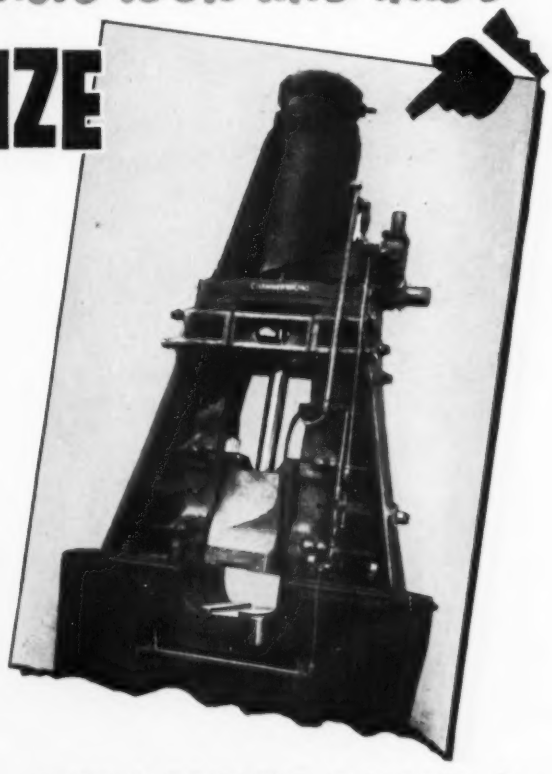
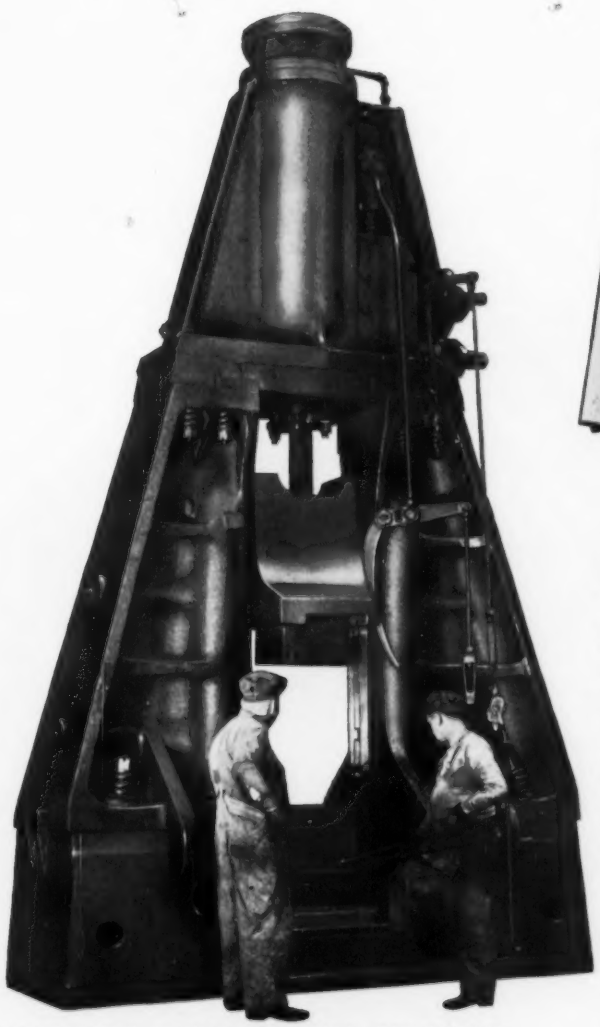
Do your Steam Hammers look like this?

TIME TO MODERNIZE





CHAMBERSBURG
STEAM DROP HAMMERS

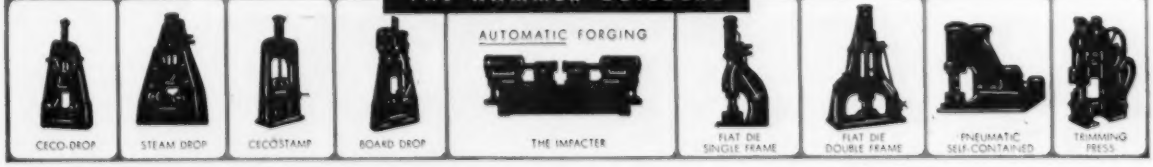
have kept pace with modern forge shop requirements. With Chambersburg Steam Drop Hammers you get more forging per blow and more forgings per hour for higher production. And—at the same time you'll find production savings in lower power consumption, less downtime, better die alignment. Every feature of Chambersburg Hammers is designed to produce forgings at the lowest possible cost per piece.

Write for Bulletin

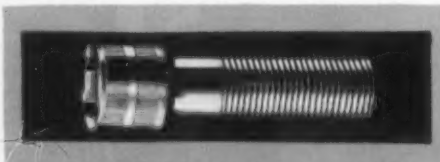
CHAMBERSBURG ENGINEERING COMPANY . . . . . CHAMBERSBURG, PA.

CHAMBERSBURG

THE HAMMER BUILDERS



AGF HEAT TREATING PRODUCTION LINE AT HOLO-KROME INSURES UNIFORM TENSILE STRENGTH



HOLO-KROME features socket screw products having toughness as well as uniformity of hardness and strength. AGF Furnace equipment contributes to this high standard.

POSITIVE ASSURANCE that every Holo-Krome socket screw will have correct tensile strength and a uniform distinguishing color, characteristic of quality heat treating, is embodied in the above AGF installation.

This AUTOMATIC production line consists of:

(1) An AGF No. 240 Heating Machine which hardens the screws in a controlled atmosphere at the rate of 400 to 500 pounds per hour.

(2) An AGF Conveyorized Quenching Tank.

(3) An AGF No. 242 Heating Machine which tempers the work utilizing residual quenching oil remaining on the work pieces to produce an attractive black finish, which then discharges into

(4) an AGF Conveyorized Quench Tank equipped with a vibrator discharge chute for removing the oil and carrying the work to the packaging operation.

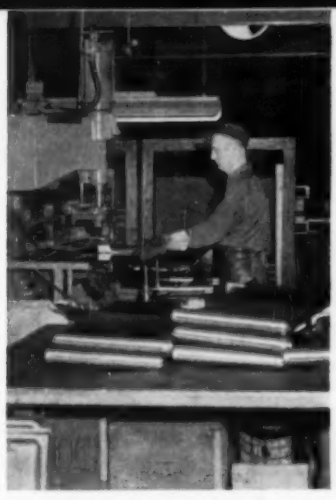
Your heat treating of fasteners or other small parts like stampings, screw machine products and precision castings can be accomplished with greater uniformity and quality control and at lower cost in AGF equipment.

PIONEER Furnace Engineers and experienced metallurgists at AGF will weigh your needs and make a proper recommendation without obligation.

Write today for the name of nearest AGF factory trained representative located in major industrial areas.

AMERICAN GAS FURNACE CO.

1004 LAFAYETTE STREET — ELIZABETH 4, N. J.



This operator
is seam welding heat exchanger sections formed from Youngstown Copperoid Drawing Sheets at American Furnace's Red Bud, Ill. plant.

Accent on excellence

Youngstown cold-rolled sheets

HEATING AFCO SINCE 1880 Comfortmaker® COOLING

This modern young homemaker demands a year-round heating and air conditioning system that will permit her home to radiate with comfort—and she'll get it with her new AFCO Base-Blo produced by American Furnace Company of St. Louis, Missouri.

These beautifully styled and highly efficient heaters incorporate Youngstown Cold-Rolled Sheets as housing members. Also, Youngstown's Copperoid Drawing Sheets are used to fabricate heat exchanger units because of their excellent non-corrosive qualities. As a result—long, trouble-free performance is guaranteed all American Furnace customers throughout the world.

Wherever steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence".

QUALITY YOUNGSTOWN SERVICE

THE
YOUNGSTOWN
SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel
Youngstown, Ohio

500 Stock Sizes of Ledaloyl Self-Lubricating Bearings

With stock Ledaloyl self-lubricating bearings you can enjoy the advantages of economy and quick delivery and still have a wide latitude in design. Plain cylindrical, flanged and spherical self-aligning types are available with various ID's, OD's and lengths. Engineers find that in many applications the standard composition and size tolerances are ideal for their products.

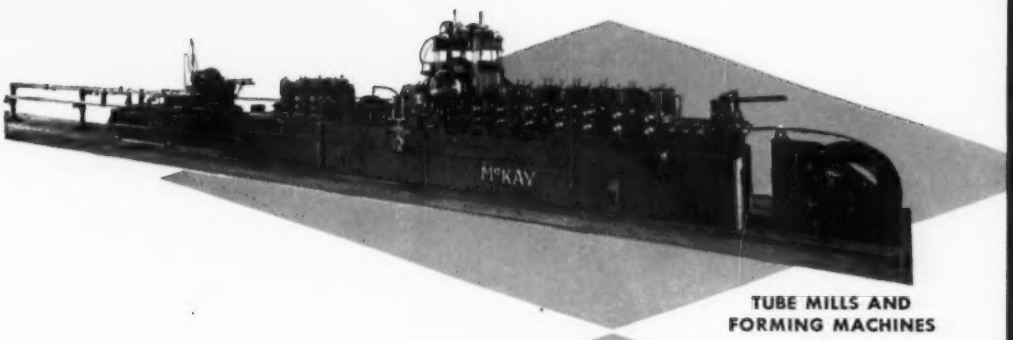
Johnson stock Ledaloyl bearings will function efficiently in hundreds of different applications. Oil is retained in the pores of the bearing and metered out to the shaft when it is in motion, eliminating the need for an expensive and bulky lubricating system. In many cases the bearing will provide adequate lubrication for the life of the product without adding to the original oil content.

If you are interested in obtaining complete details on the advantages of stock Ledaloyl self-lubricating bearings or any of the many other types of Johnson sleeve bearings consult your Johnson distributor or write for our catalog.

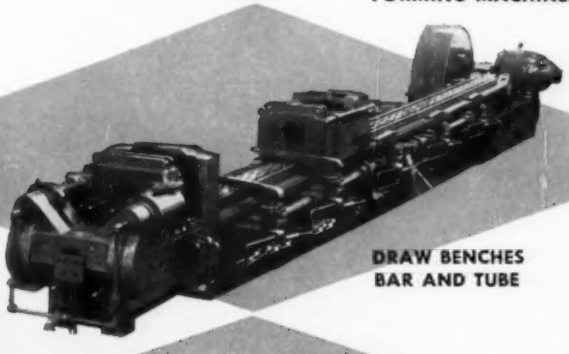
Johnson Bronze

505 South Mill Street, New Castle, Pa.

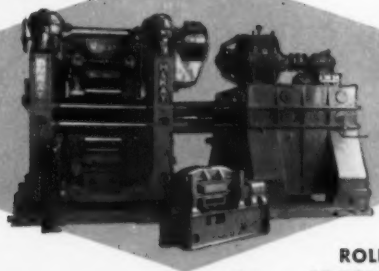
Subsidiary: Apex Bronze Foundry Co., Oakland, Cal.



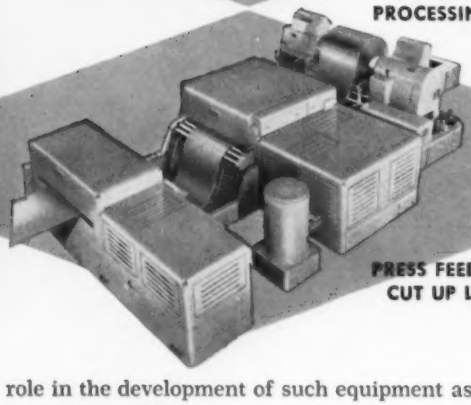
TUBE MILLS AND
FORMING MACHINES



DRAW BENCHES
BAR AND TUBE



ROLLER LEVELERS,
PROCESSING MACHINES



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CUT UP LINES

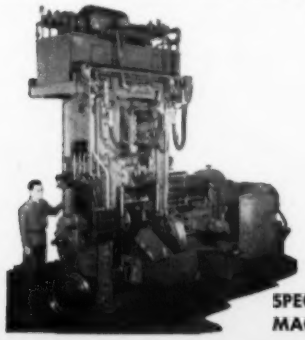
Metal working Automation in action...

If you're in the metal working business, you should be acquainted with McKay *automated* lines available for many metal working operations.

McKay pioneered and has played a leading role in the development of such equipment as that pictured on this page.

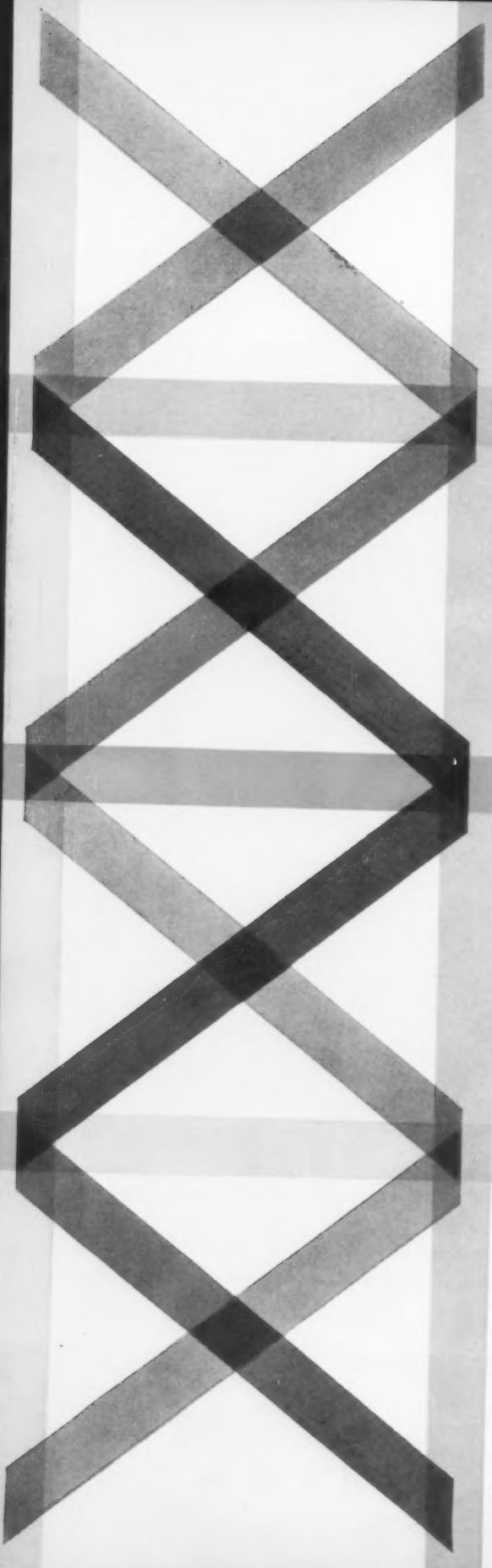
Basic McKay designs can be modified, or special machines developed to meet specific requirements.

THE McKAY MACHINE CO., YOUNGSTOWN, OHIO



SPECIAL
MACHINERY

McK



The pit nobody liked...

except our customers

This is of course our one-way fired soaking pit . . . fired from the top.

The location of the burner is only one of the features responsible for its enthusiastic acceptance. Most important however are the 30 years of experience and refinements which we have built into the pit since we first introduced it.

That is why, today, it is the pit everybody respects . . . especially our customers.

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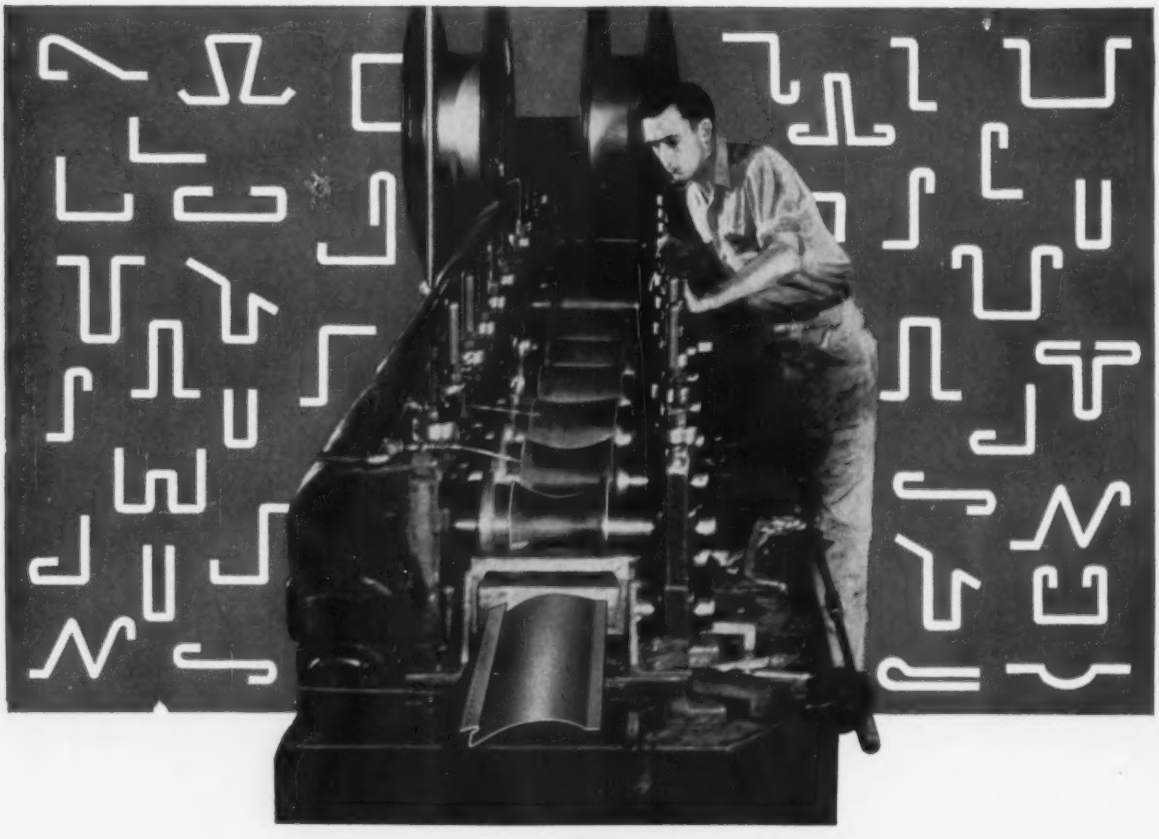
Surface



With a Yoder...ONE MAN PRODUCES 30,000 FEET OF SHAPES A DAY!

Cold-roll forming with a Yoder Roll-Forming machine makes spectacular production possible in many metalworking applications and industries.

A multitude of shapes, simple or complex, produced from a wide variety of coated or uncoated stock, and destined for a virtually endless list of purposes, can be easily, quickly and economically produced with a Yoder cold-roll forming machine.

Whether it be moldings, structurals, siding, roofing, tubulars, cabinet shells, or any one of a thousand requirements, it can be quickly produced with accuracy and uniformity the Yoder way. The conversion cost is usually so low that even part-time operation makes a Yoder cold-roll forming line a profitable investment.

A great many modifications of the basic shape such as welding, coiling, ring forming, notching, perforating, embossing and cutting to length, can be simultaneously introduced with little or no additional labor cost. It will pay you big dividends to fully investigate the advantages of Yoder cold-roll forming. A fully-illustrated, 88-page book clearly discusses every important aspect of this amazingly versatile method of metal fabrication... it is yours for the asking.

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An announcement of interest to manufacturers of steel parts

Improvements in today's STRESSPROOF® STEEL BARS WITH COPPER

1 **100,000 PSI YIELD STRENGTH** in all sizes . . . without heat treating.

2 **IMPROVED PHYSICAL PROPERTIES...** better fatigue life wearability, and resistance to atmospheric corrosion. Over-all quality is improved.

3 **IMPROVED MACHINABILITY...** STRESSPROOF with copper now machines faster and better than ever. It gives longer tool life, better finish, and more production from a day's run, according to shop production records.

4 **CLOSER TOLERANCES...** Tolerances for rounds have been tightened to meet the need for more precise parts as follows:

¼" to 1½"	Over 1½" to 2½"	Over 2½" to 3⅜"
+.000 −.004	+.000 −.005	+.000 −.006

5 **COMPARED WITH OTHER STEELS, STRESSPROOF COSTS EVEN LESS TODAY...** Also saves machining and heat treat costs, and you get a better quality part. It will pay you to take another look at this improved material.

Your STEEL SERVICE CENTER stocks contain today's STRESSPROOF. It has been produced and shipped over a several months' period.

JUST PUBLISHED! Use this coupon to request your copy of new bulletin, "Improvements in Today's STRESSPROOF Steel Bars."

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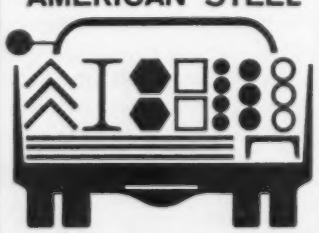

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Simplify inventory and purchasing...

Save money by cutting production costs right down the line...

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THE INTERNATIONAL NICKEL COMPANY, INC.

67 Wall Street INCO **New York 5, N. Y.**

Now you can *speed-test* gears up to 4000 RPM

Since the accuracy of any gear test depends on how well it simulates actual operating conditions, we've developed a hypoid tester with speeds up to 4000 RPM. The higher range of speed on the No. 17A-4000 Hypoid Tester makes possible a new standard in the testing of bevel gears.

Complete testing on one machine. The No. 17A-4000 Hypoid Tester is arranged for both power and slow rolling tests. With the power test you can observe a gear's smoothness of operation, its noise characteristics, and its tooth contact pattern.

Roll test the gear and you get accurate readings of its eccentricity, tooth size, spacing, and profile.

With the No. 17A-4000 Tester you can test any right angle straight bevel, Zerol® bevel, spiral bevel and hypoid gear of any pitch and up to 20″ OD.

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Exact duplication of settings. Indicator set-up fixtures are available for large quantity testing. With these gages you can make identical settings on a battery of machines, or get the same setting repeatedly on a single machine.

New bulletin. We've prepared a bulletin on the No. 17A-4000 Hypoid Tester to answer any questions you might have about its construction or operation. Write for a copy.

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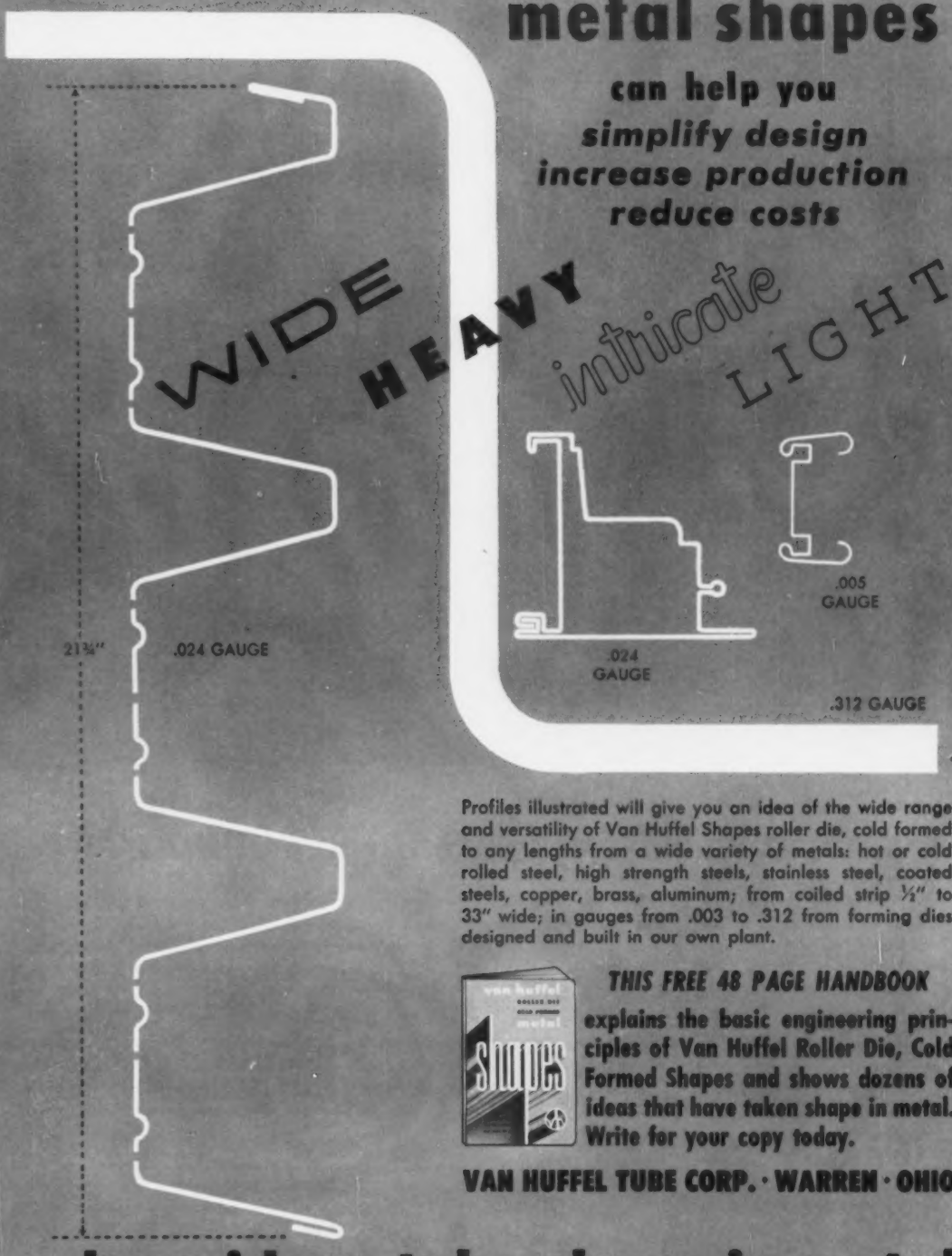

Profiles illustrated will give you an idea of the wide range and versatility of Van Huffel Shapes roller die, cold formed to any lengths from a wide variety of metals: hot or cold rolled steel, high strength steels, stainless steel, coated steels, copper, brass, aluminum; from coiled strip ½" to 33" wide; in gauges from .003 to .312 from forming dies designed and built in our own plant.

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explains the basic engineering principles of Van Huffel Roller Die, Cold Formed Shapes and shows dozens of ideas that have taken shape in metal. Write for your copy today.

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where ideas take shape in metal

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The Wean Engineering Company, Inc. has engineered and constructed seventy-one continuous pickling lines

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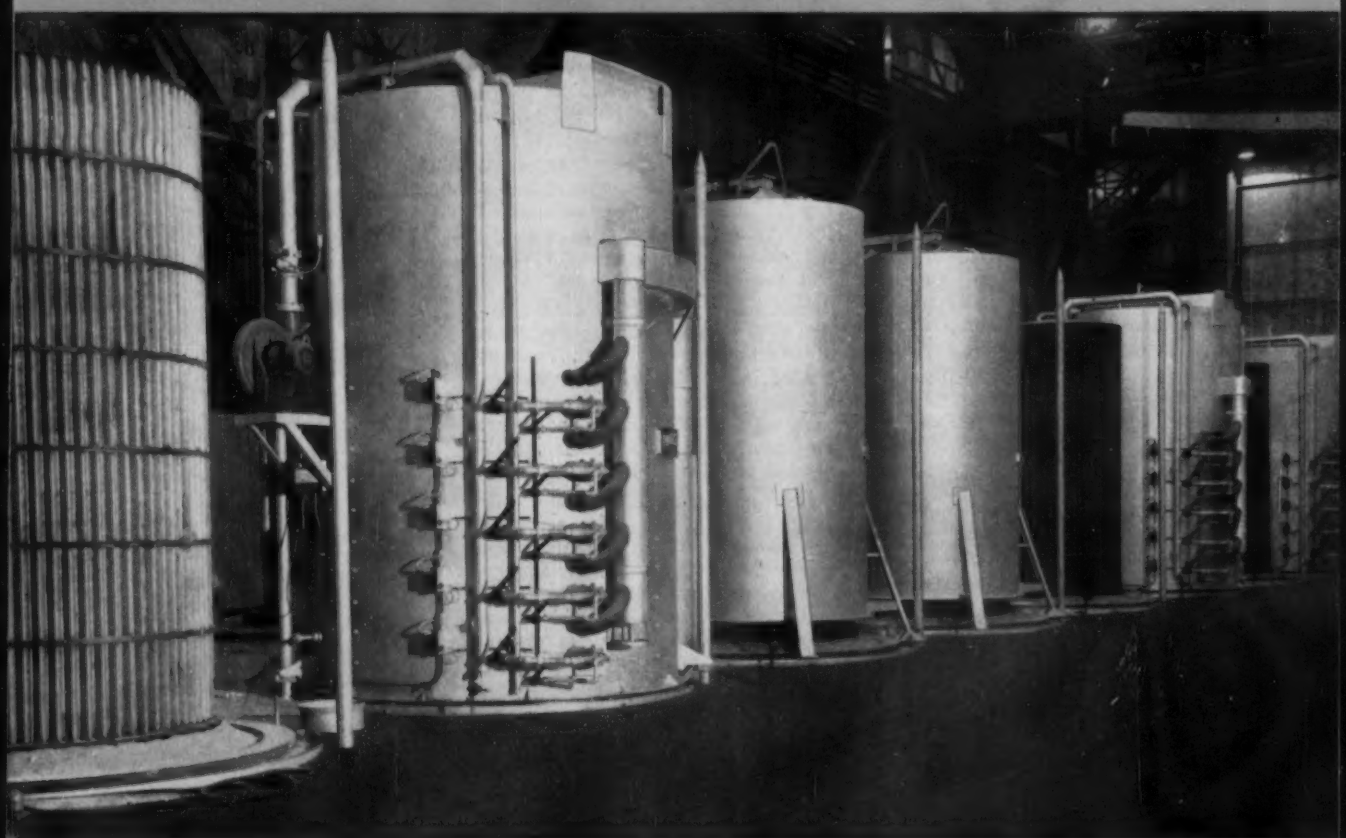
● ALL the advantages of combined multi- and single-stack sheet annealing facilities are provided in this Swindell Canadian installation—*plus* the economies in inventory and maintenance conferred by a single make of furnace, with major components interchangeable throughout. Six single-stack furnaces and 18 bases with cooling covers join with three four-stack furnaces and nine bases to assure complete flexibility in annealing operations at all times. ● Both furnace types feature SWINDELL *horizontal radiant tubes*—for controlled vertical temperature distribution, longer life and better heat application—and the new SWINDELL *high volume convection system*, which maintains the rugged steel mill type design for which our equipment is noted. ● Let us consult on your requirements!

flexible installation of

SWINDELL

ANNEALING FURNACES

—providing positive control of vertical temperature distribution plus new SWINDELL high volume convection system



Swindell-Dressler Corporation provides a complete engineering service for the steel industry in the design and construction of new plants, and modernization of existing facilities. Consultations arranged gladly on request.

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A Review of the Phosphate Coatings

Specified for the Protection of Metal Surfaces

By HUGH GEHMAN, Assistant Manager, Product Development Dept., AMCHEM PRODUCTS, INC.

Phosphate coatings are protective inorganic finishes that actually change the chemical nature of metal surfaces. The metal reacts with the applied phosphate solution to form a nonmetallic, crystalline coating which serves to:

- **Improve paint adhesion**
- **Provide protection against corrosion**
- **Increase lubricity of friction surfaces**
- **Facilitate mechanical deformation of metals**
- **Decorate—in many instances**

Satisfactory protection of steel, zinc and aluminum surfaces against corrosion, paint peeling and blistering, and hard wear requires precision methods of chemical conversion coating.

Types of Conversion Coatings

There are seven classes of chemical conversion coatings commonly specified and used throughout industry today. They are as follows:

Zinc-iron phosphate (ACP Granodine®). This is the heaviest type of coating (gray in color) used for prepaint treatments on steel, iron and zinc surfaces. The process requires five or six operations: cleaning; rinsing; rust removal, if necessary; coating; rinsing; and a second rinse. Coating weight ranges from 100 to 600 mg per sq. ft.

Medium or large volume production of automobile bodies, appliances, projectiles and cabinets can be handled effectively.

The coating solution improves paint adhesion by forming a crystalline deposit over the metal surface. This deposit is rough, as revealed microscopically, and so offers an ideal gripping surface for paint particles.

Manganese-iron phosphate (ACP Thermoil-Granodine®). This is a heavy black coating used on friction surfaces to prevent galling, scoring and seizing of parts. Typical metal parts treated are pistons, piston rings, gears, cylinder liners, camshafts, tappets and various small arms components.

Iron phosphate (ACP Duridine®). This is a comparatively new process that places a light coating on surfaces for improved paint adhesion. Since cleaning and coating occur in the same bath, it has only three to five stages.

The iron phosphate treatment is a spray process suited for medium to large volume, large or small work. Precleaning is normally unnecessary, an economy factor in its favor.

Products protected by this process are steel or iron fabricated units, such as cabinets, washing machines and refrigerators. Weight of coating is 50 to 100 mg per sq. ft.

Zinc phosphate (ACP Lithoform®). This is a crystalline coating produced on galvanized iron and other zinc surfaces—also cadmium—for improving paint adhesion. The purpose of the coating is to provide a paint-gripping surface and to prevent the reaction between acidic components of the paint and the zinc metal, with the formation of soaps and loss of paint adhesion.

This coating is applied in weights of 75 to 500 mg per sq. ft. There are no limitations on volume or production or on size of products treated. Zinc phosphate coating is used on zinc alloy die castings, zinc or cadmium plated sheet or components, hot dip galvanized stock, and Galvanneal.

Amorphous phosphate (ACP Alodine®). This is a relatively new protective coating for aluminum and aluminum alloys. It may be used in place of anodic deposition for improved paint adhesion and corrosion resistance.

This coating is practical for production in any volume. Coating weight is 100 to 600 mg per sq. ft. Products treated include helmets, belt buckles, aircraft and aircraft parts, bazookas and rocket motors, roofing and siding. Particularly good when aluminum is painted prior to forming.

Zinc-iron phosphate for oil absorption (ACP Permadine®). This is a relatively heavy coating adapted to the retention of rust-inhibiting drying or nondrying oils and waxes on ferrous metal surfaces. The coating is applied to a weight of 1000 to 4000 mg per sq. ft.

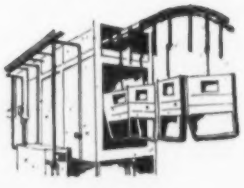
The process is satisfactory for large or small work in any volume—nuts, bolts, hardware, guns, tools, etc.

Zinc-iron phosphate for metal forming (ACP Granodraw®). This is a specialized coating used in conjunction with a suitable lubricant to facilitate the cold mechanical deformation of steel. The coating acts as an anchor for the lubricant throughout drawing, extrusion, and cold forming operations.

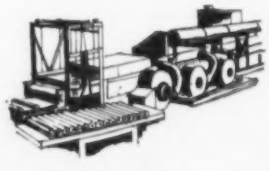
It is a successful treatment for products such as blanks and shells for cold forming, heavy stampings, impact extruded shapes, drawn wire and tube.

For more complete information about any one or all of these chemical conversion coatings, contact an ACP sales representative or write us at Ambler, Pa.

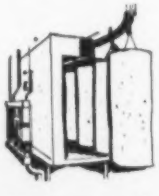
Typical Installations of Phosphate Coating Systems



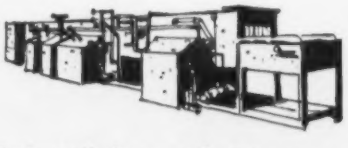
Customer: Truck manufacturer
Problem: Preparing cab parts for painting
Cycle: Phosphate wash; phosphate wash; rinse; chromic acid rinse; dry



Customer: Aluminum screen manufacturer
Problem: Final finish of aluminum shade screen
Cycle: Wash; rinse; phosphate coat; rinse; chromic acid rinse; dry



Customer: Water heater manufacturer
Problem: Preparation of water heater shells for synthetic enameling
Cycle: Phosphate wash; rinse; chromic acid rinse; dry



Customer: Hardware manufacturer
Problem: Preparing hardware parts for painting
Cycle: Wash; rinse; phosphate coat; rinse; chromic acid rinse; dry

Amchem Products, Inc.
Ambler 20, Pa.

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Top Sellers for fast, smooth work on lead, babbitt, zinc, aluminum, bronze, plastics, cast iron and steels.

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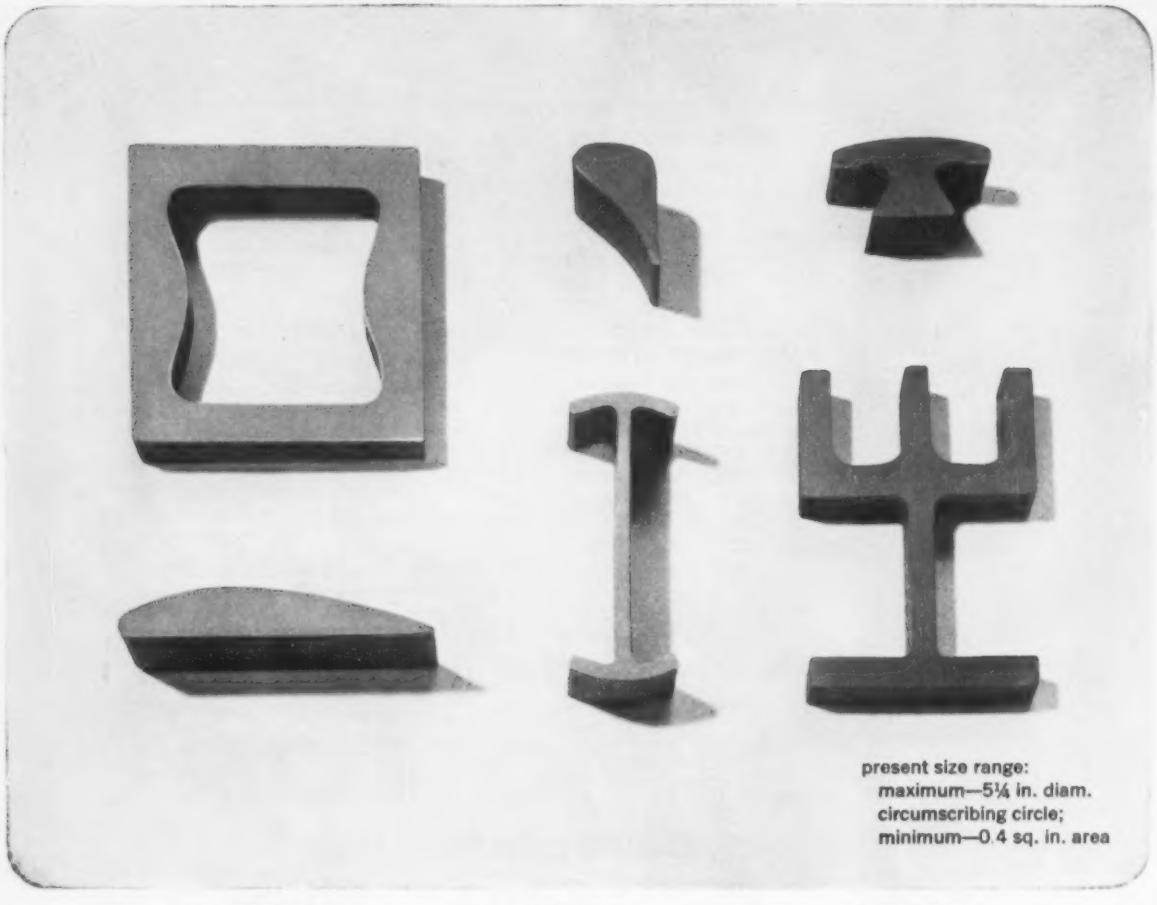

present size range:
maximum—5¼ in. diam. circumscribing circle;
minimum—0.4 sq. in. area

- 321 Stainless
- 410 Stainless
- 405 Stainless
- SAE 1020
- 304 Stainless
- SAE 4340

Here's how highly intricate steel extrusions from Allegheny Ludlum help you cut costs

Allegheny Ludlum Extrusions can help you cut costs, save money. If you are now rolling, casting or machining steel parts like these, consider the cost-cutting features inherent in extruding metal, already proved by non-ferrous extrusions during the last 10 years.

A-L high-quality Steel Extrusions can save you money on four very important counts. (1) Orders are taken in quantities as small as 40 pounds. No large tonnage rolling requirements. (2) Charge for die design is low—under $200. No expensive rolls to cut. (3) Machining costs are slashed to a minimum; there's no waste of material. (4) Extruding saves time from the order to availability of finished parts.

There is no limit to what steels can be extruded. Allegheny Ludlum works everything from all stainless grades to carbon and electrical steels, high temperature alloys, nickel alloys and even metals such as zirconium.

Prove to yourself that extruding steel can save you money. Write for Allegheny Ludlum's 12-page technical bulletin, full of process explanations, material properties, design tips, etc. Or contact your nearest A-L office for technical assistance.

Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pennsylvania. Address Dept. A-9.

WSW 7120

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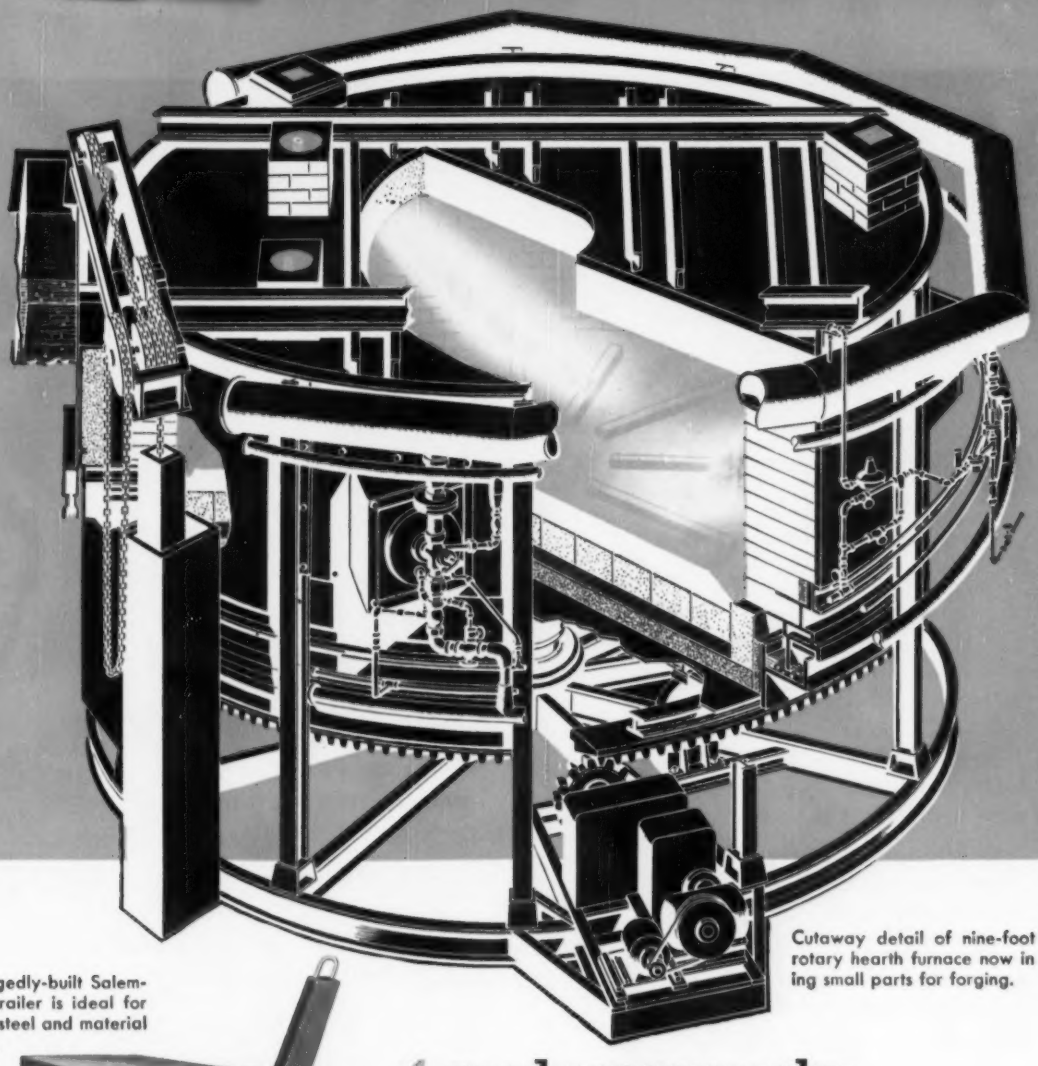
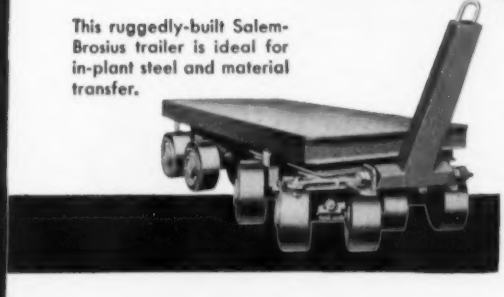
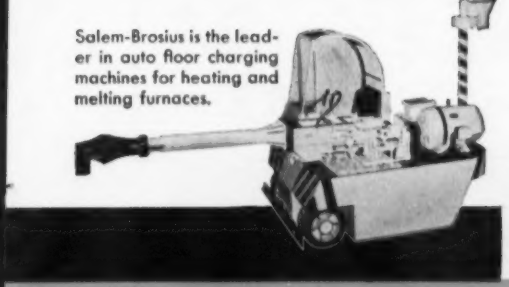
EVERY FORM OF STAINLESS . . . EVERY HELP IN USING IT



Cutaway detail of nine-foot diameter rotary hearth furnace now in use heating small parts for forging.



This ruggedly-built Salem-Brosius trailer is ideal for in-plant steel and material transfer.



Salem-Brosius is the leader in auto floor charging machines for heating and melting furnaces.

4 good reasons why this Salem-Brosius furnace should be in your shop

Manufacturers of parts for aircraft, automobiles, machinery, home appliances and a host of other products find this Salem-Brosius rotary hearth furnace best suited to their metal heating needs for the following reasons:

1. **Uniformity of heating:** Burner positioning and hearth movement guarantee uniformly heated work—piece after piece—day after day.
2. **Continuous heating of odd shapes:** Odd shapes and sizes are heated continuously because they are not moved after positioning on the hearth until they are discharged.
3. **Automatic clearing of furnace:** Furnace is emptied of work automatically. No dummy loads are required to empty or fill furnace.
4. **Low operating cost:** Fuel efficiency, low maintenance and efficient use of plant floor space reduce production costs.

SALEM-BROSIUS, INC.

CARNEGIE, PENNSYLVANIA

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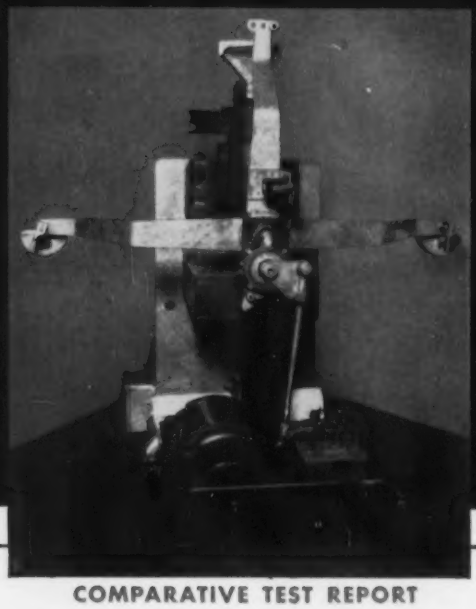


Here at Cleveland, we feel that a buyer of metallic abrasives should be able to do just that.

The breakdown tester we use is shown herewith, and it's designed to separate the fact from the fiction.

After 100 passes through this tester, at 7200 r.p.m., we *know* how good our abrasives are and how long they will last.

This tester, combined with our other extensive laboratory equipment, is an integral part of our production control system.

All of it, of course, is working hard every day to give you top-quality, long-life, economical Metallic Abrasives . . . based on fact.

There are more details in our catalog, which is yours for the asking.

COMPARATIVE TEST REPORT

MATERIAL TESTED — S660 CHILLED IRON SHOT

A - Cleveland Metal Abrasive B - Competitors C - Competitors

SCREEN ANALYSIS

U.S. No.	S.A.E. Spec.	A	B	C
8	0	0	0	0
10		35.5	54.0	36.0
12	85	60.3	36.2	48.0
14	12	4.2	7.7	14.0
Pan	3	0	1.1	2.0

CHEMICAL ANALYSIS

	A	B	C
T.C.	2.72	3.29	2.42
Si	1.13	1.36	1.20
Ph	.056	.380	.130
Mn	.40	.36	.47
S	128	.176	.141

Rc HARDNESS

	A	B	C
Low	58	59	57
High	62	65	62
Average	60	63	59

BREAKDOWN TEST

Thru U.S. No. 10 on U.S. No. 12 — No. of Grams Tested—100 — 100 Passes at 7200 R.P.M.

	A	B	C
12	0	0	0
14	.2	0	.1
16	.4	0	.5
18	4.8	.1	3.5
20	15.6	.2	9.4
25	24.4	7.9	20.7
30	13.5	8.4	12.1
35	9.9	10.6	11.5
40	4.1	11.3	6.0
45	2.7	7.1	4.6
50	2.0	14.2	3.4
Pan	13.7	27.6	17.8
Loss	8.7	12.6	10.4

Remarks — C.M.A. material best by test. *B.M.*

CLEVELAND ABRASIVES

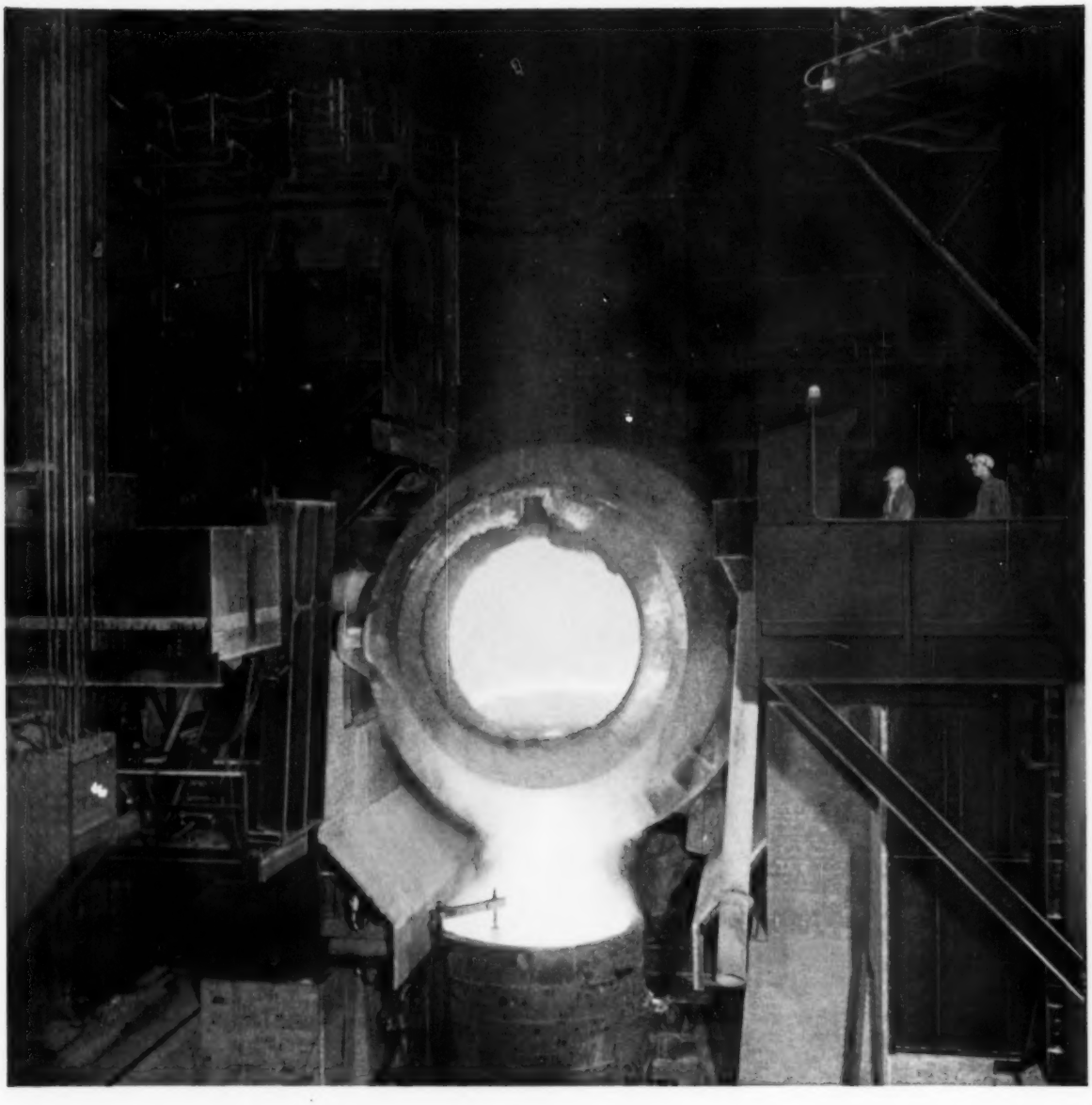
1. Realsteel Shot and Grit 2. Pearlitic Malleable 3. Normalized
4. "A" Iron 5. Hi-Strength "B" 6. Chilled Iron 7. Drawn Steel

World's Largest Producer of Metallic Abrasives

CLEVELAND *metal abrasive co.*

General Office: 888 East 67th Street • Cleveland 8, Ohio

Plants at: Howell, Michigan; Toledo; Cleveland; Northfield, Ohio



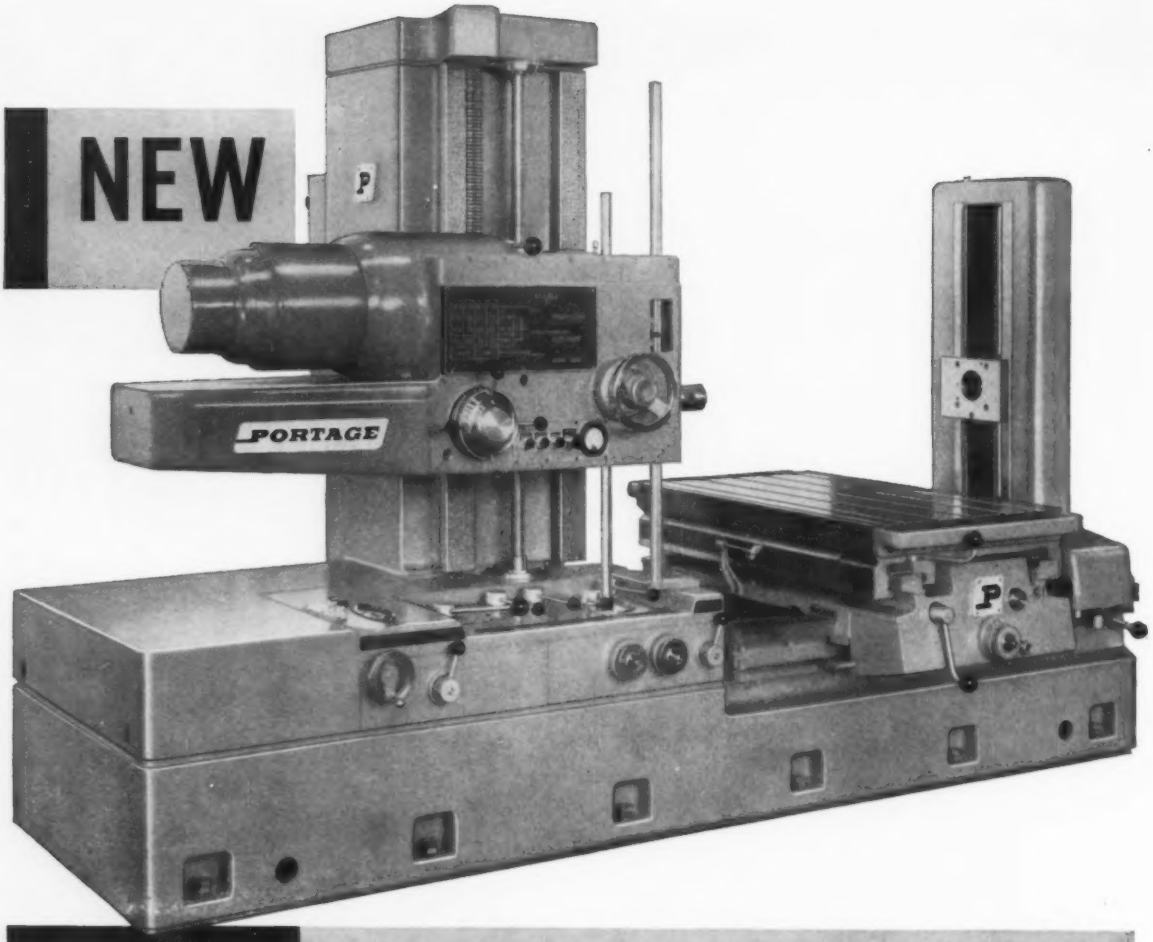
McLOUTH DOUBLES OXYGEN STEEL CAPACITY

The vessel shown above produces 90 ton heats of Oxygen Steel. Two of these vessels—the largest producing in the world—have been added to the original Oxygen Steel making equipment and are a vital part of the expansion program at McLouth's Trenton, Michigan plant.

Ever since McLouth pioneered the first Oxygen Steel Process in the United States, we have continued to expand and improve our manufacturing facilities to bring you better steels for the product you make today . . . and the product you plan for tomorrow.

McLOUTH STEEL CORPORATION Detroit 17, Michigan

Manufacturers of high quality stainless and carbon steels.



PORTAGE...3" diameter horizontal milling, drilling and boring machine

Literature, just off the press, covers features and specifications.

Mr. Buyer... here's a 3 inch bar machine you can't afford not to investigate. It's new from the top of the column to the bottom of the base... All new speeds and feeds, plus a versatility of job applications make it a real money maker. All new construction features offer a truly strong, rugged machine... and the pay-off... it's priced amazingly low, every shop can afford one ...write, wire or phone for complete information.

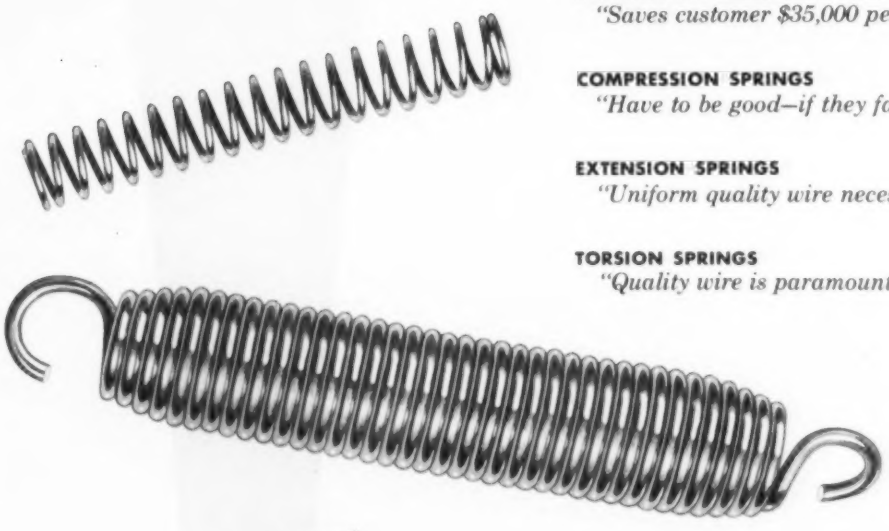
THE PORTAGE MACHINE COMPANY

1049 SWEITZER AVE., AKRON 11, OHIO
PORTAGE 2-0211 TWX AK266

BUILDERS OF PRECISION MACHINE TOOLS, SPECIAL AND PRODUCTION MACHINERY SINCE 1916

KEYSTONE MB SPRING WIRE WIRE STUDY

KEYSTONE MB Spring Wire Quality pays off for ROCKFORD SPRING Company

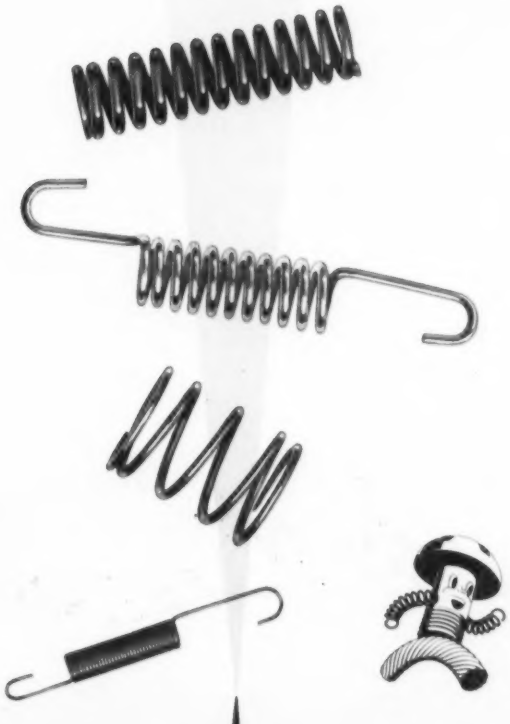


AUTOMOTIVE HEADLIGHT SPRING
"Saves customer $35,000 per year"

COMPRESSION SPRINGS
"Have to be good—if they fail, engines fail"

EXTENSION SPRINGS
"Uniform quality wire necessary for quality springs"

TORSION SPRINGS
"Quality wire is paramount"



These are a few reasons why Rockford Spring Company, Rockford, Illinois, prefers Keystone MB Spring Wire. And there are more, as explained by Burdette R. Steadman, General Manager: "We have found Keystone's metallurgical staff helpful in working out our design problems. The physical properties of Keystone Wire are held very close, and so it is possible to achieve even temper and even length. Rejects are negligible."

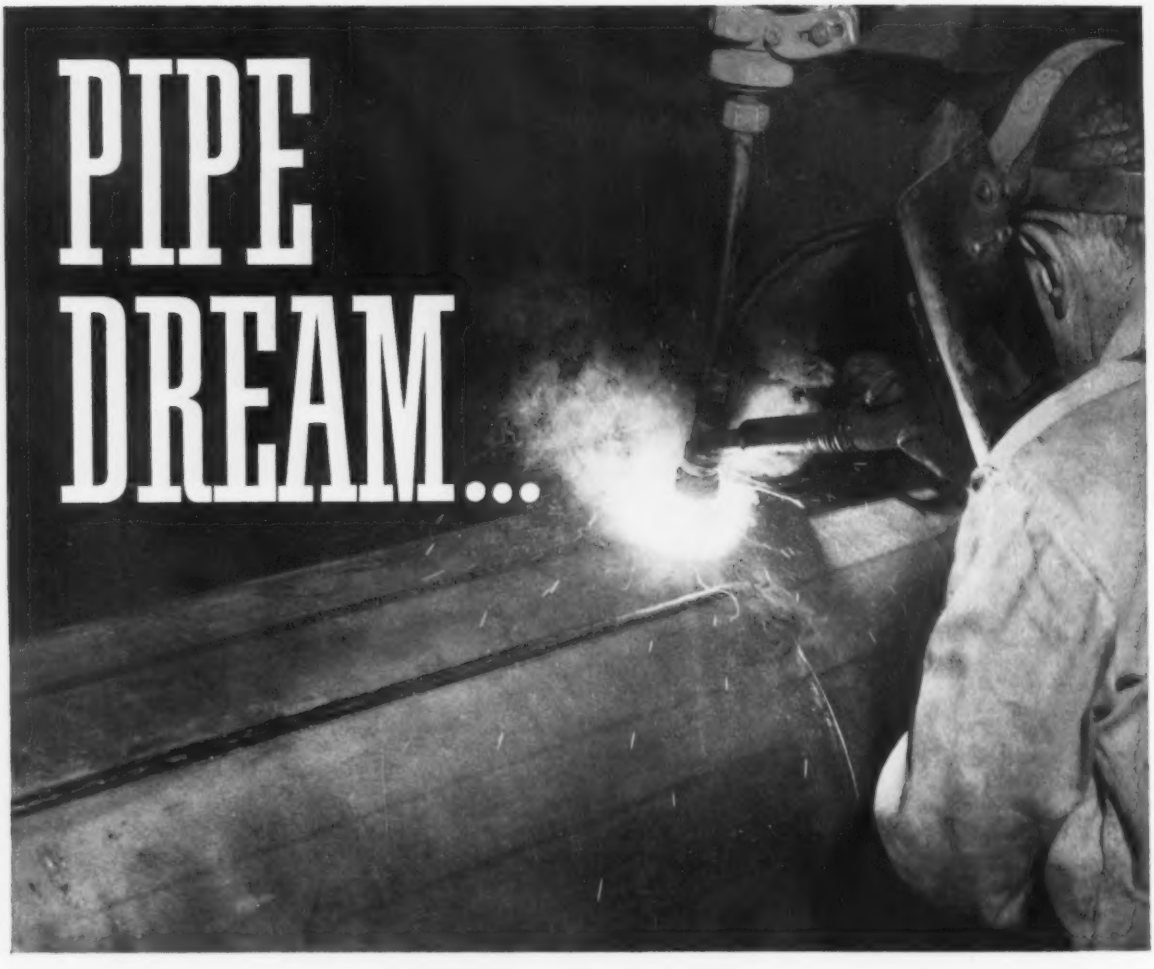
Consistent uniformity of composition, temper and diameter is necessary for quality spring production. Keystone MB Spring Wire is also available in drawn galvanized and copper coated finishes, as well as spheroidized annealed temper.

Your Keystone Wire Specialist and the facilities of our metallurgical department are at your service to help solve your wire problems.

Keystone Steel & Wire Company, Peoria 7, Illinois

KEYSTONE

WIRE FOR INDUSTRY



...UNIONARC Welding saves $7000 on one production run

UNIONARC Welding—LINDE's new electric welding method for steel—increased production by 300% and saved a western pipe mill $7000 on a single run of steel pipe. Replacing covered electrode methods, UNIONARC Welding is expected to save this company $150,000 a year.

UNIONARC Welding uses a continuously-fed wire electrode, magnetically coated with flux and shielded with carbon dioxide gas. It has three times the speed and weld penetration of covered electrode welding. And UNIONARC Welding gives you "finished", X-ray quality welds and low hydrogen deposits—in all welding positions.

See for yourself—ask your nearest LINDE representative to *prove* that UNIONARC Welding slashes time and labor costs over conventional methods. Call your local LINDE office today! Or write Dept. I-92, LINDE COMPANY, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y. Offices in other principal cities. In Canada: Linde Company, Division of Union Carbide Canada Limited.

Linde TRADE-MARK

UNION CARBIDE

"Linde", "Unionarc", and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

KEYSTONE MB SPRING WIRE STUDY

KEYSTONE MB Spring Wire Quality pays off for ROCKFORD SPRING *Company*

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"Saves customer $35,000 per year"

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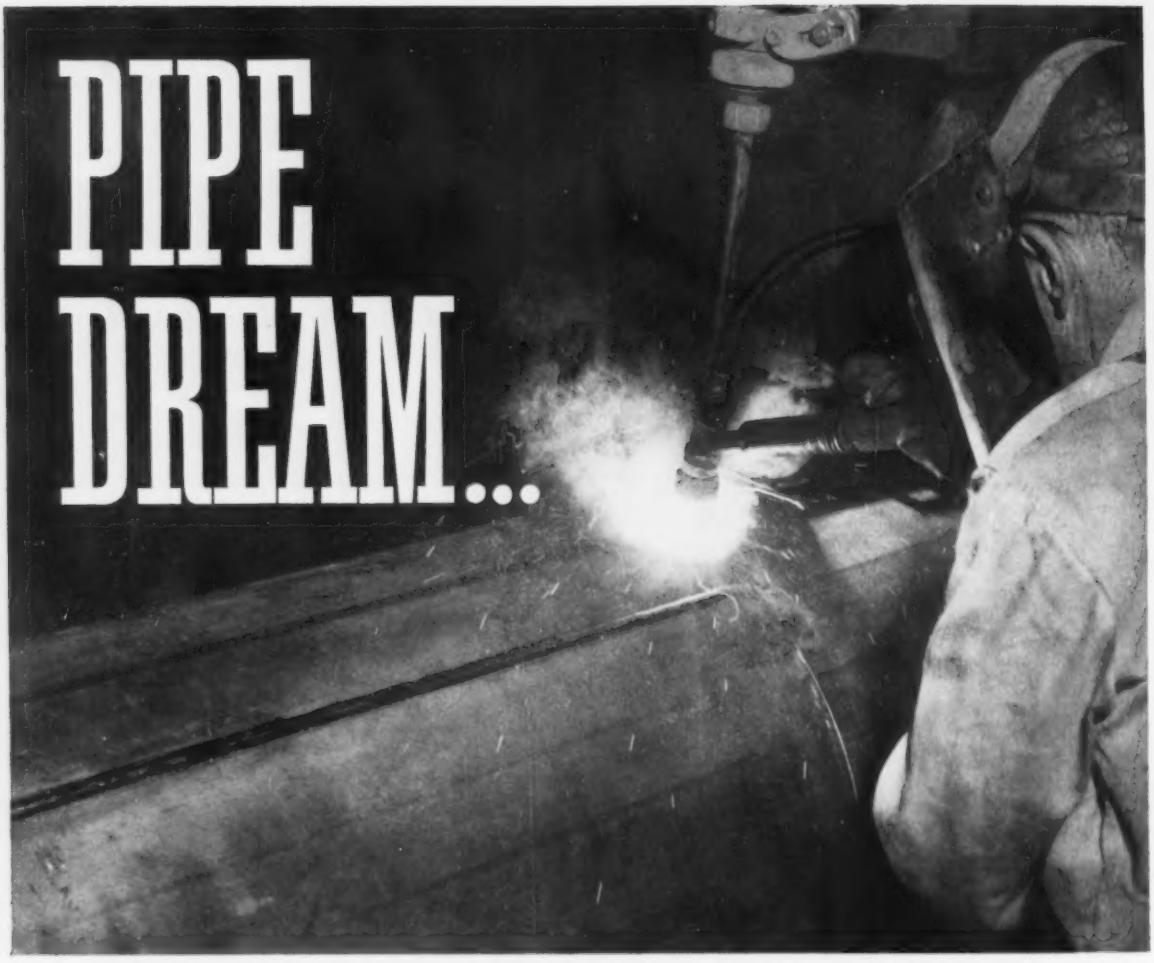
Keystone Steel & Wire Company, Peoria 7, Illinois

KEYSTONE

WIRE FOR INDUSTRY



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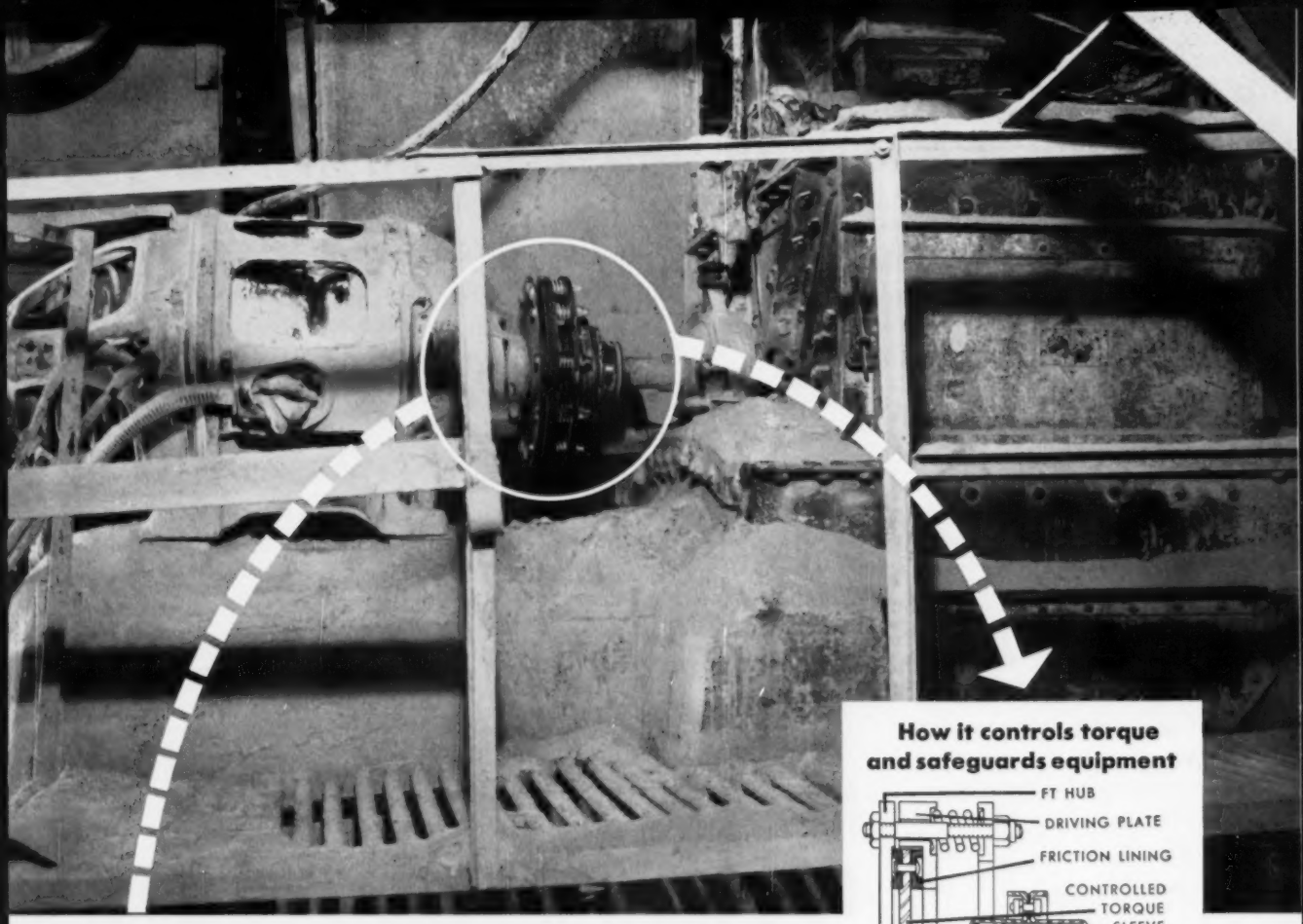
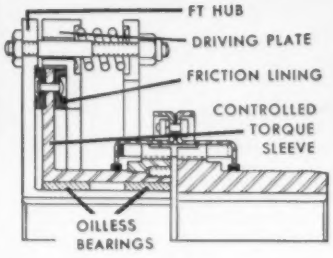


How it controls torque and safeguards equipment



Protect machines from overload damage with FALK Controlled Torque Couplings

The above picture shows a Falk Controlled Torque Coupling connecting a 150 hp motor to a hammermill. Formerly, when tramp iron got into the mill, it was necessary to rewind the motor at least twice a year. But, in the 2½ years after installing a Falk Controlled Torque Coupling, no motor repairs were required. *That is real saving!*

Wherever overload danger exists, a Falk Controlled Torque Coupling gives positive protection against machinery damage from excessive torque or jams. This unique coupling has an adjustable friction slip clutch which can be set at *any* predetermined torque limit. Thus, transmission of dangerous shocks is prevented...overloads are limited...shaft breakage is eliminated.

Another big advantage is that, when the cause of the overload is removed, the entire coupling will rotate and transmit power without resetting, and *without replacing parts or repairing the coupling.*...And, the Controlled Torque Coupling incorporates the famous Falk Steelflex torsional resilience to smother ordinary shock and vibration, plus the ability to accommodate shaft misalignment....Consult your Falk Representative or Authorized Falk Distributor. **Ask for Bulletin 4100.**

THE FALK CORPORATION, MILWAUKEE 1, WISCONSIN

MANUFACTURERS OF QUALITY GEAR DRIVES AND FLEXIBLE SHAFT COUPLINGS

Representatives and Distributors in many principal cities.

Here (as in photo), the torque-control hub is shown mounted on driving shaft. From this hub, power is transmitted through friction lining to controlled torque sleeve. Load to be transmitted is determined by the (pre-set) pressure on friction lining. In case of overload, this hub still rotates until power is shut off—but the rest of the coupling and the driven machine will slow down or stop.

Motor Shut-off Control

By adding an automatic cut-out switch with V-belt connection to driven shaft, motor can be stopped immediately. With the standard hub mounted on driven shaft, the switch opens the electric circuit when speed of switch falls below predetermined value.

FALK

...a good name in industry

why make parts the slow, costly way?

COLD-HEAD THEM!

Steel

Tappet plunger, splined square-head shaft, collar for adjustment wedge, universal joint bearing cup, pipe plug, spark plug body.

Copper

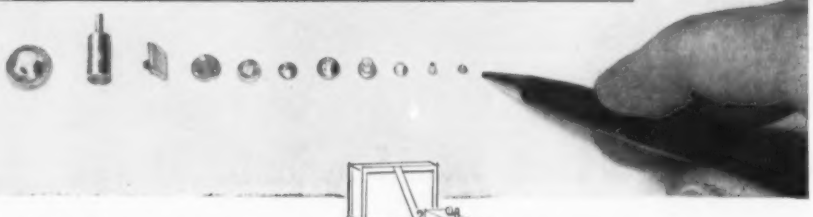
Ornamental stud, distributor cap center insert, commutator bar, wire clamp, solenoid contact, starter field terminal.

Aluminum

Hollow rivet, blind rivet, flanged collar, link, distributor cap outside insert.

Precious Metals

Electrical contact, transistor case, miscellaneous rivets and electrical contacts.



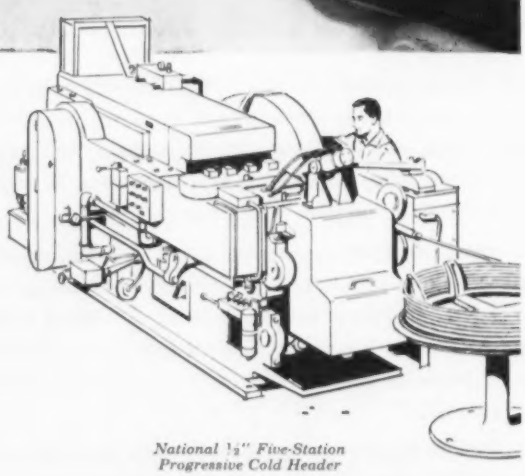
Of various metals, the parts identified above were developed for fast, accurate production on National Cold Headers.

Most of these important jobs are made without waste, ready for end use. All are cold-forged from coiled wire – start-to-finish in one compact Header – without any intermediate steps.

New technical break-throughs are making jobs like the above every day commercial realities. More workable wire, better lubricants, improved die materials and vast engineering experience are combining to adapt formerly difficult work to modern, profitable methods.

Whether you now have Headers or not, send us prints or samples of your jobs, or bring them to Tiffin where more of our people can help with *your* problem.

Perhaps up-to-date Cold Heading, a truly fast-growing process in metalworking, can pay off for you.



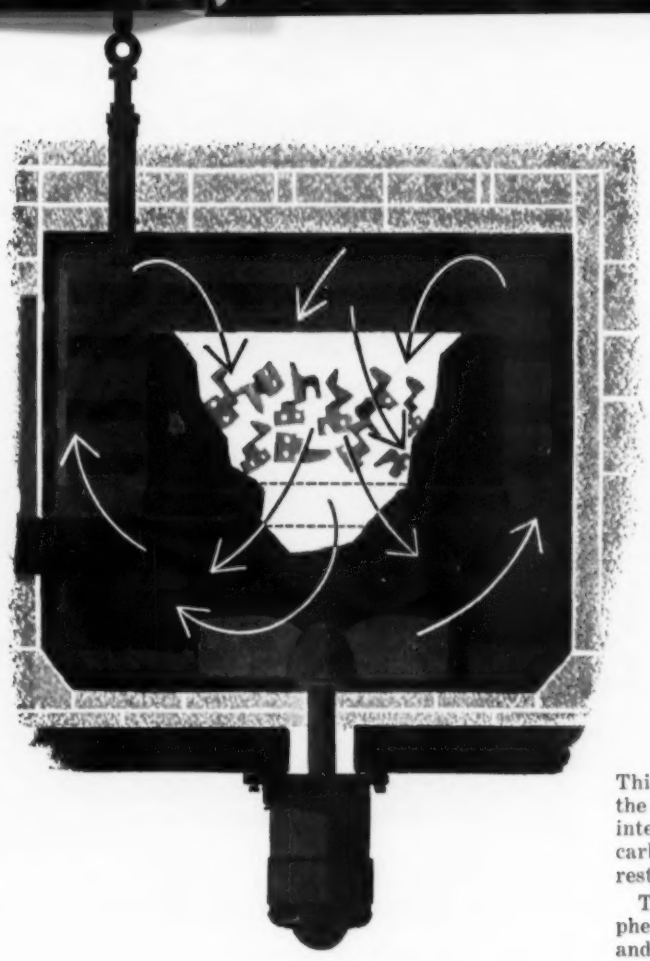
National ½" Five-Station Progressive Cold Header

Founded 1874 — DESIGNERS and BUILDERS of MODERN FORGING MACHINES • MAXIPRESSES • REDUCEROLLS • COLD HEADERS BOLTMAKERS • NUT FORMERS • TAPPERS • NAILMAKERS CO-PIONEERS WITH INDUSTRY OF ADVANCED METALWORKING PRODUCTION METHODS

NATIONAL MACHINERY CO.

TIFFIN, OHIO, U. S. A.

HARTFORD DETROIT CHICAGO



it's new!

The L&N Tricarb method with controlled atmosphere . . . temperature . . . quench

This precision furnace is the most versatile in the history of heat treating. It can be used interchangeably for controlled case carburizing, carbonitriding, homogeneous carburizing, carbon restoration, or hardening.

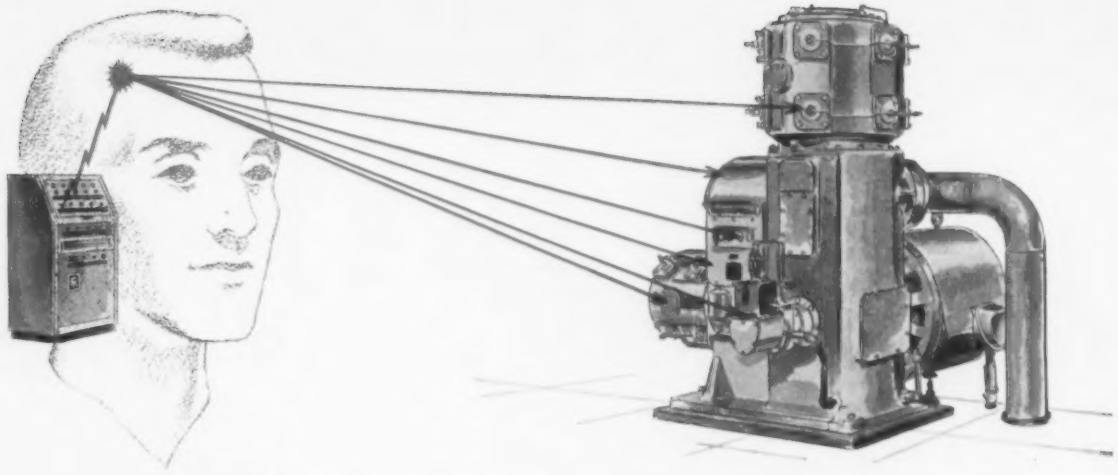
The unique combination of Microcarb atmosphere control, Speedomax® temperature control and the controlled quench, makes possible significant quality improvements in production heat treating. New, efficient, L-O voltage radiant tube heaters are rugged, requiring minimum maintenance—are not subject to failures from carbon deposits when the furnace is used for carbonitriding without Microcarb control.

In many instances the Tricarb method has proved a practical solution to lower production costs . . . higher quality . . . more process automation . . . elimination of rejects and spoilage. In others it makes thoroughly practical the handling of many previously impossible or difficult heat treatments on a reproducible, production basis.

Folder T-620(17) explains the Tricarb Method. Write us at 4956 Stenton Ave., Phila. 44, Pa.

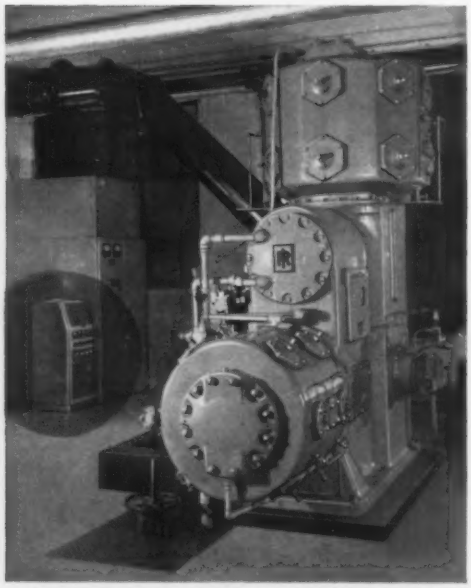
When small cams for electrical instruments are carburized in this Tricarb furnace, 6¢ per piece is saved on subsequent buffing operations because work comes from the furnace so clean.

LEEDS NORTHRUP
Instruments Automatic Controls • Furnaces



Making a Compressor "Think for Itself"

New 'Tendamatic control brings automatic supervision to the COMPRESSOR PLANT



'Tendamatic control of this Ingersoll-Rand type XLE two-stage heavy-duty air compressor assures maximum protection of capital investment, maximum manpower utilization, continuity of production and lower maintenance expense.

INGERSOLL-RAND's new *'Tendamatic* control is like a *tireless attendant*, who keeps checking the operation of your compressor every second.

All you need to do is push the start button; the 'Tendamatic does everything from then on. Its built-in safeguards eliminate routine inspection and supervision, detect trouble before it can do any harm to the compressor, and put all maintenance on a low-cost *preventive* basis.

This completely automatic control system keeps an eye on air pressure and temperatures... lubricating oil pressure and temperature... the cylinder lubricator... and the float level in the condensate trap. It watches for leaking valves and mechanical failure of running parts.

Any time there is a variation from normal operation, the 'Tendamatic identifies the nature of the malfunction and gives audible *and* visible warnings. If the warnings are ignored or forgotten, 'Tendamatic shuts down the compressor before any damage can result.

To plan now for future savings, ask your Ingersoll-Rand representative for complete information on the new 'Tendamatic compressor control.

'Tendamatic control is available only on Ingersoll-Rand air and gas compressors

Ingersoll-Rand

1-873 11 Broadway, New York 4, N. Y.

GAS & DIESEL ENGINES • PUMPS • AIR & ELECTRIC TOOLS • CONDENSERS • VACUUM EQUIPMENT • ROCK DRILLS

President Harvey Gaylord, right, discusses with Roger M. Cox, Supervisor of Buildings and Grounds, the Scott Wiper Survey that led to impressive savings at Bell Helicopter Corporation. (Without obligation, Scott will provide a survey of your plant to see whether wiper costs can be reduced.)

People buy Scott Wipers for many reasons:

Bell Helicopter saves $10,000 a year with Scott Wipers

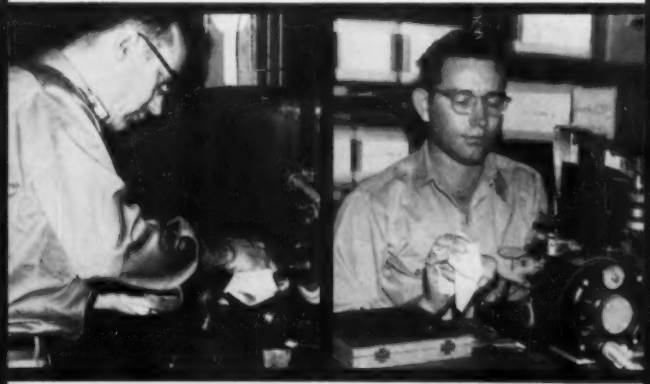
Bell, world's leading producer of helicopters since 1946, switched to Scott Wipers three years ago. Since then, Bell's average savings over the cloth rags previously used amounts to $10,000 a year.

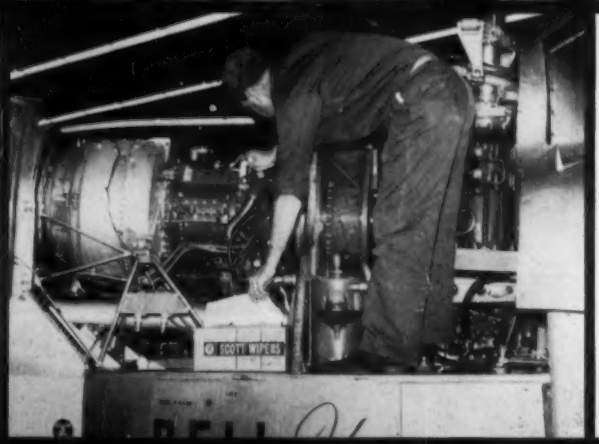
Mr. Roger M. Cox, Supervisor of Buildings and Grounds, reports: "Laundering the cloth rags was expensive. We never got a uniform batch of good cloth—texture and quality varied. Then we ran into an epidemic of rusty pins that scratched hands and faces of employees. We had several cases of infections." Employees welcomed the change to Scott Wipers—quickly learned to take advantage of their inherent qualities: freedom from lint, high-absorbency and easy disposability. Because Scott Wipers are always uniform in size and wiping capacity, Bell employees have become skillful in using them economically for maintenance and inspection operations.

SCOTT PAPER

Scott has prepared a 15-minute sound strip film on industrial wipers narrated by John Cameron Swayze. You can arrange a showing in your plant by contacting your Scott distributor. He's in the Yellow Pages under "Paper Towels." Or write: Scott Paper Company, Dept. IA-89, Chester, Pa.

See "Father Knows Best" on CBS-TV.



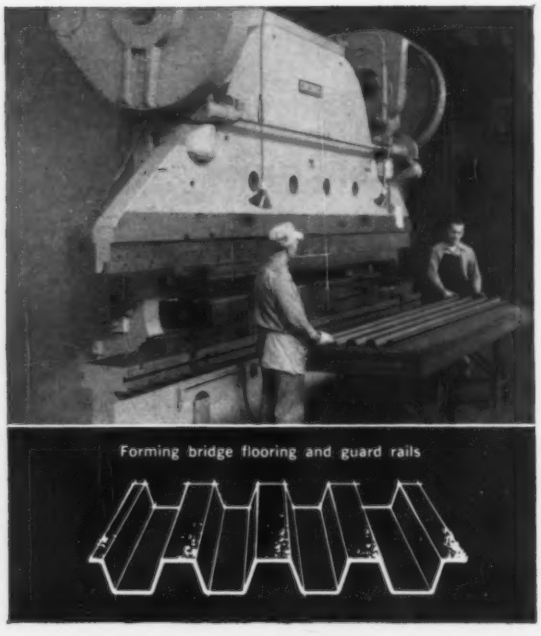


Because they're white, Scott Wipers make it easy to detect imperfections and foreign matter when inspecting high-precision pieces.

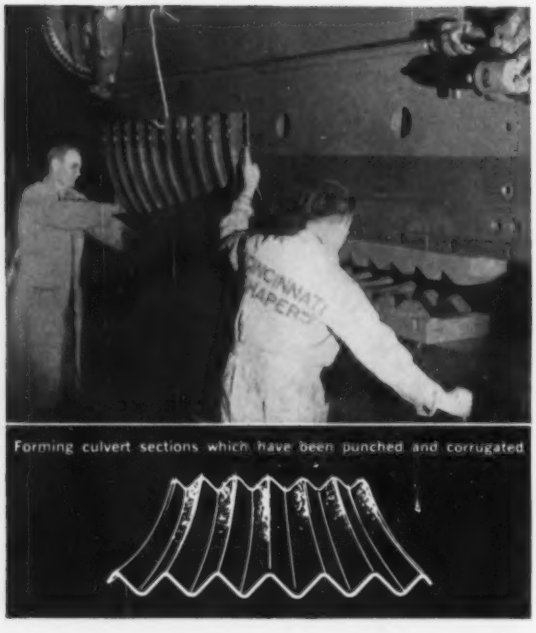
Scott Wipers have high wet-strength—wipe off lubricating oil at gear grinders and other machine tools without tearing.

At identification number stamping operation, absorbent Scott Wipers quickly remove smudges from work piece and operator's hands.

Low unit cost of Scott Wipers provides economical engine clean-up for after-flight inspection.

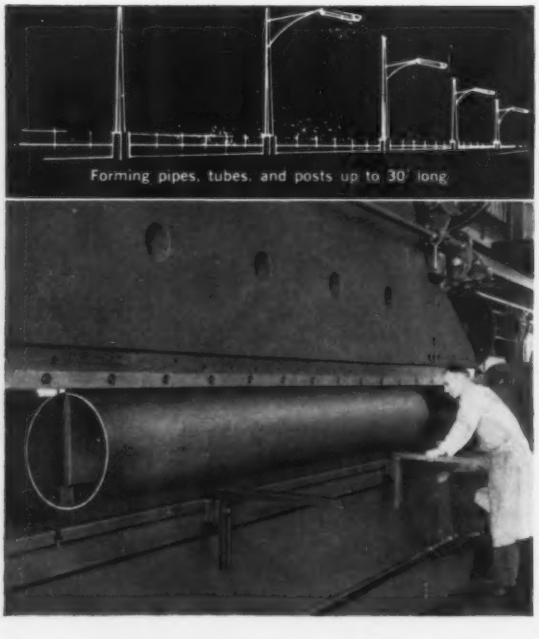


Forming bridge flooring and guard rails

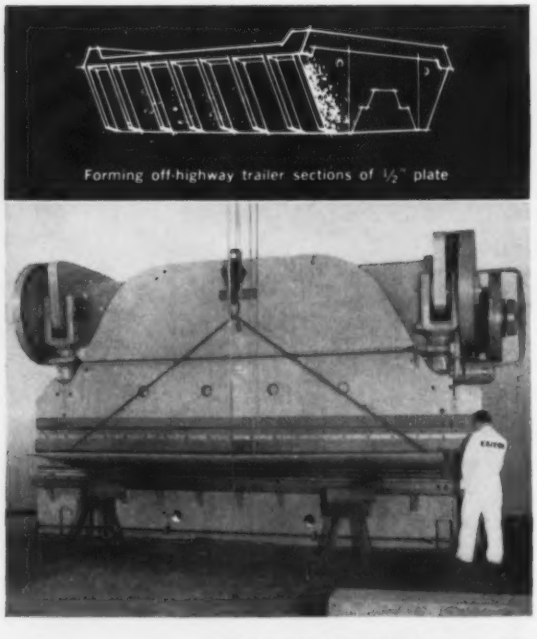


Forming culvert sections which have been punched and corrugated

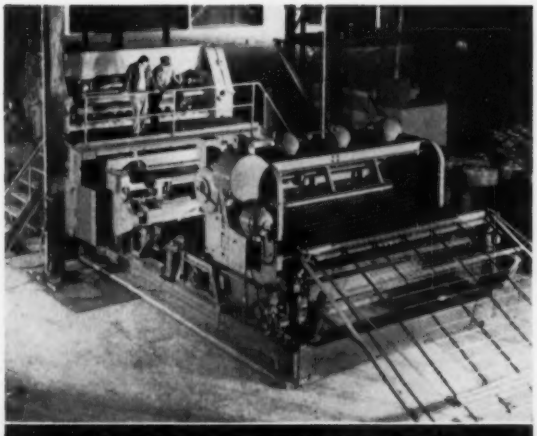
Tool up with Cincinnati® for



Forming pipes, tubes, and posts up to 30' long



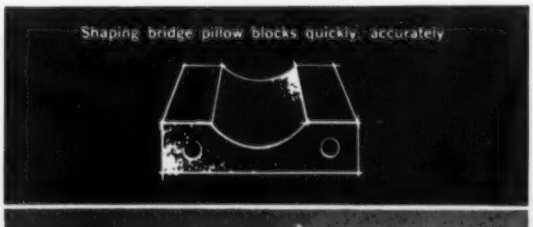
Forming off-highway trailer sections of ½" plate



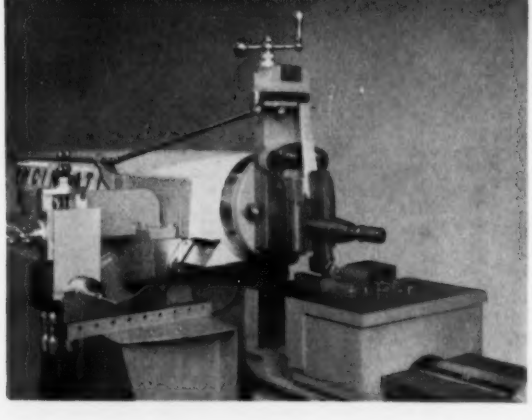
Automatically shearing welded steel road mesh

Embossing road signs

America's huge road program



Shaping bridge pillow blocks quickly, accurately



Here are just a few of the many jobs now being done profitably on Cincinnati® Shears, Press Brakes, and Shapers—helping to build America's highways.

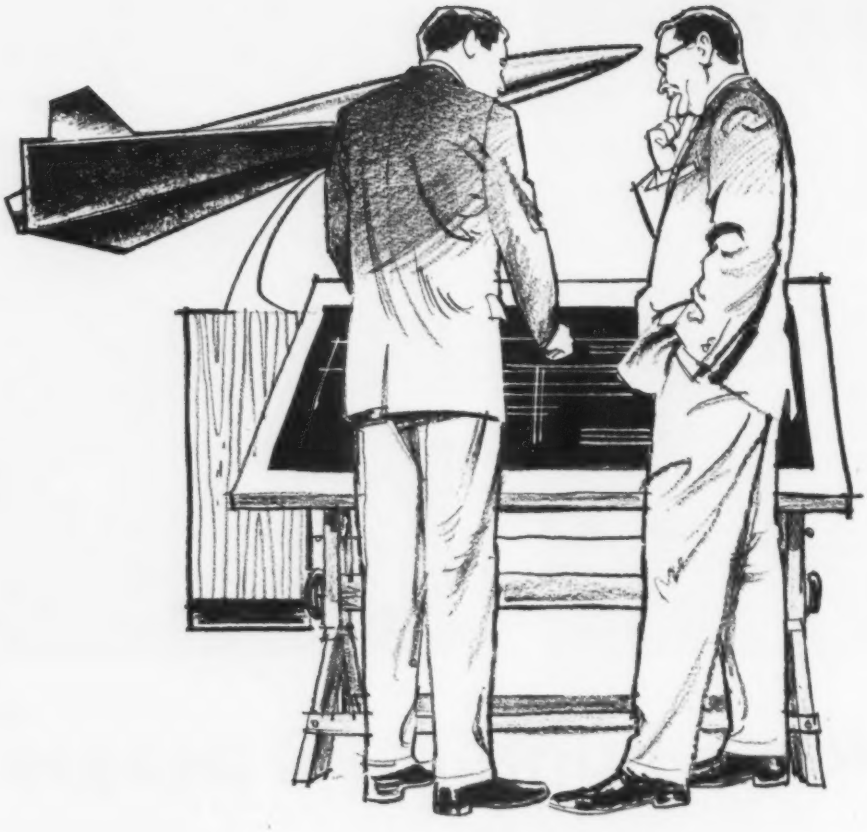
Your share of the profits from this vast highway program will depend on your ability to supply metal components on time, in sufficient volume, to specifications, and at competitive prices. Whether you make guard rails or bridges, lampposts or culverts, curb forms or earthmovers—now is the time to measure your shear, press brake, and shaper capacity against the demand coming down the road.

Don't wait for competitive traffic. Write Department B for more data on these Cincinnati applications: Catalog B-5 on Press Brakes; Catalog S-7R on Shears; Catalog N-7 on shapers.

Shapers / Shears / Press Brakes

THE CINCINNATI SHAPER CO.

Cincinnati 11, Ohio, U.S.A.



WHATEVER YOU REQUIRE IN SILVER

. . . HANDY & HARMAN IS YOUR BEST SOURCE OF SUPPLY

You can go no further for available knowledge of, and experience in, the manufacture of silver and silver alloys. In the ninety years Handy & Harman has been active in the research, manufacture and application of silver and silver alloys for all industry, it has gained the reputation of The Number One Source and Authority.

Among the many forms of silver and silver alloys manufactured by Handy & Harman are:

- Fine silver (wire, strip and foil)
- Silver anodes and grain for plating
- Silver contact alloys
- Silver powders
- Silver flake, paints and paste
- Silver brazing alloys
- Silver electronic solders
- Silver sintered metals
- Solder-flushed silver alloys
- Silver chloride and oxide
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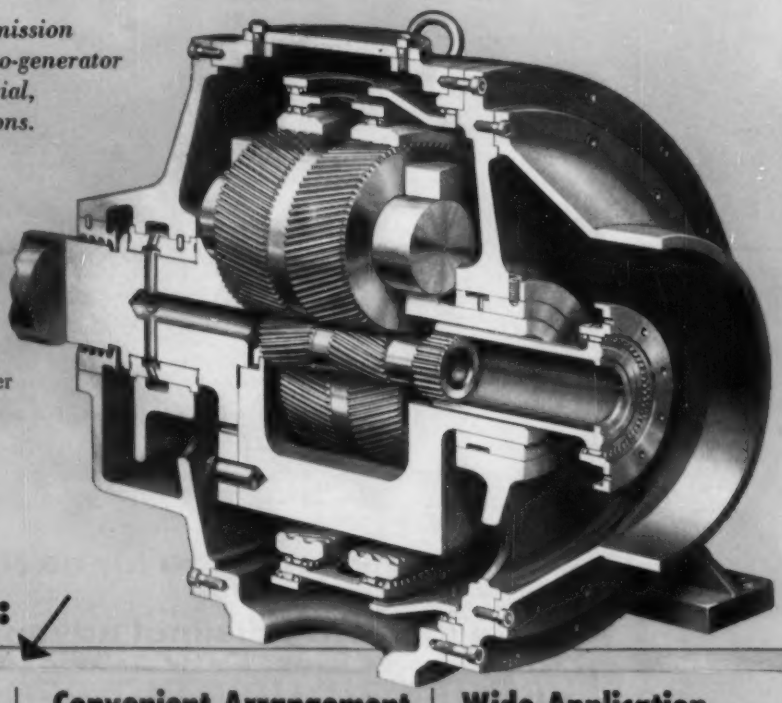

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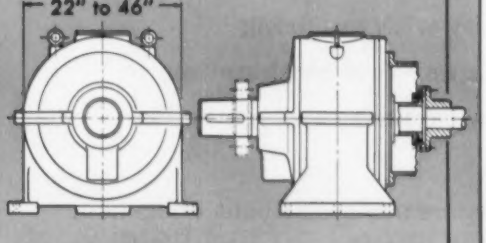

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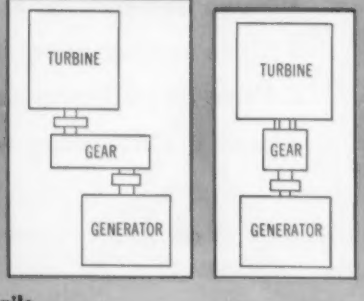

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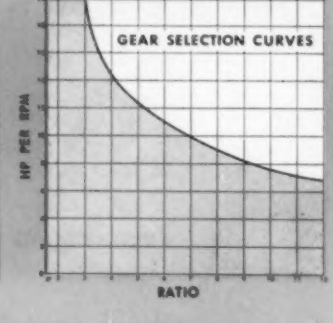

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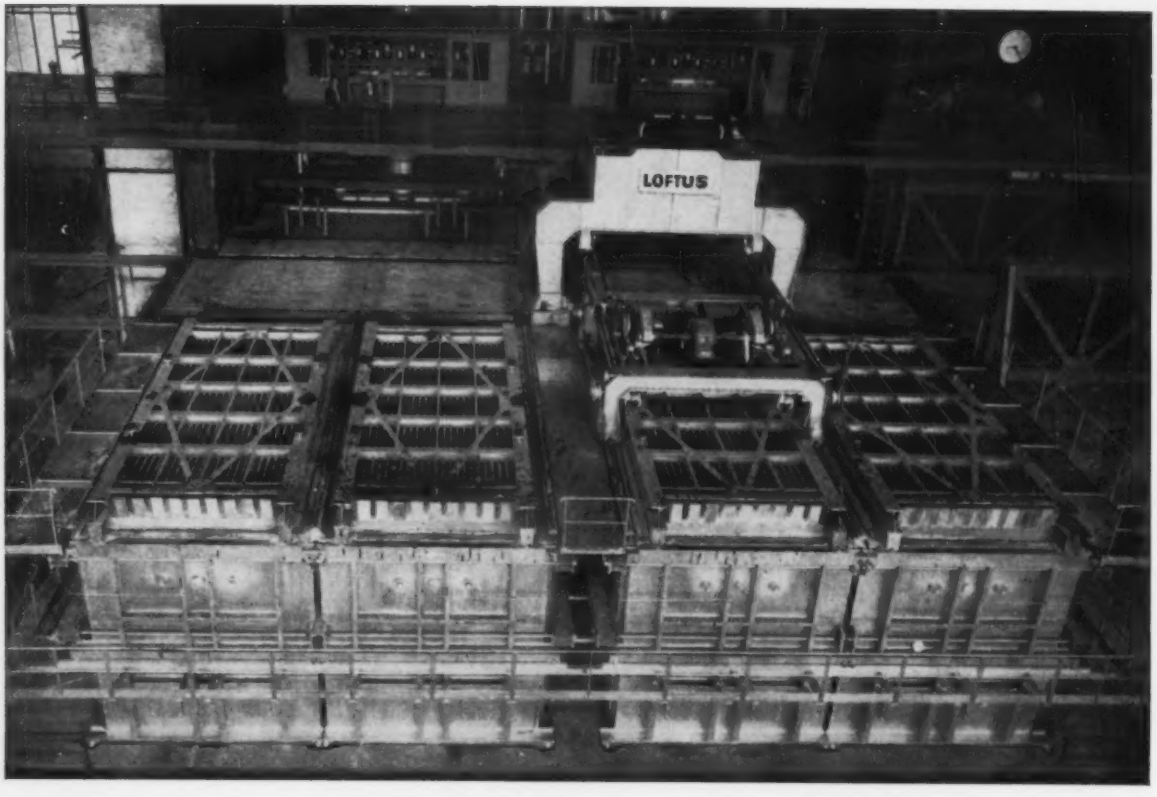

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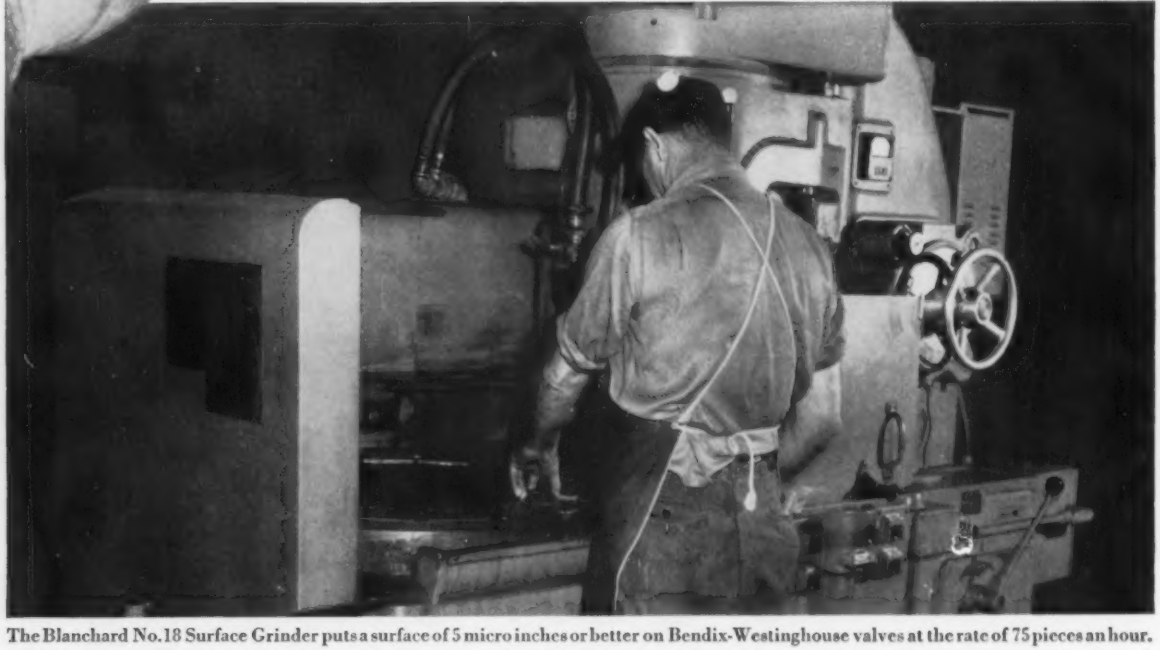
This valve gets a leak-proof seal from a Blanchard Surface Grinder

"The Blanchard Surface Grinder is one of the most important improvements in our modernization program." This report comes from the Commercial Refrigeration Division of Bendix-Westinghouse Automotive Air Brake Company—makers of power and condensing units for refrigeration equipment.



The Blanchard No. 18 Surface Grinder puts a surface of 5 micro inches or better on Bendix-Westinghouse valves at the rate of 75 pieces an hour.

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Youngstown Sheet and Tube normalizing furnace lined with B&W Insulating Firebrick

Designed and constructed by Salem Brosius, Inc. for the Campbell Works of Youngstown Sheet and Tube Company, Youngstown, Ohio, the 57′ x 38′ inside chamber of this huge new walking beam furnace is completely lined with lightweight B&W Insulating Firebrick.

This giant furnace is used to normalize seamless oil well casings and operates continuously at a temperature of 1700 F.

The B&W IFB used in the walls and suspended roof of this furnace are the lightest insulating firebrick made. This light weight and consequent low heat storage keep furnace walls at uniform temperature to provide the most efficient heating conditions. B&W IFB also reach uniform temperature faster with less fuel consumption, which means appreciable savings to furnace operators.

In addition, lightweight B&W IFB make possible more economical suspended roof constructions. They also simplify brick installation and replacement.

For information on how B&W Insulating Firebrick can lower your furnace operating costs, consult your B&W Refractories Representative or write for Bulletin R-2-H.

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Products for steel: motors, m-g sets, rectifiers, control, pumps, *Texrope* drive equipment, crushers, grinding mills, screens, transformers, unit substations, switchgear, circuit breakers, turbine-generators, voltage regulators, blowers, compressors, condensers, and water conditioning equipment.

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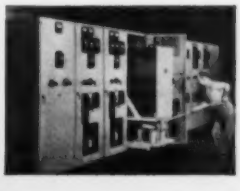
From mine to final processing, Allis-Chalmers equipment is in step with the tempo of expanding steel production. Contact the nearest A-C office in your district, or write Allis-Chalmers, Milwaukee 1, Wisconsin.



Switchgear is specially designed by Allis-Chalmers to bring high voltage to load centers, with resultant economy in cable costs, minimum line loss, efficient regulation, and complete protection.

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For hot-strip mill operation, Allis-Chalmers also supplies mag-amp regulators, and auxiliary motors and control.

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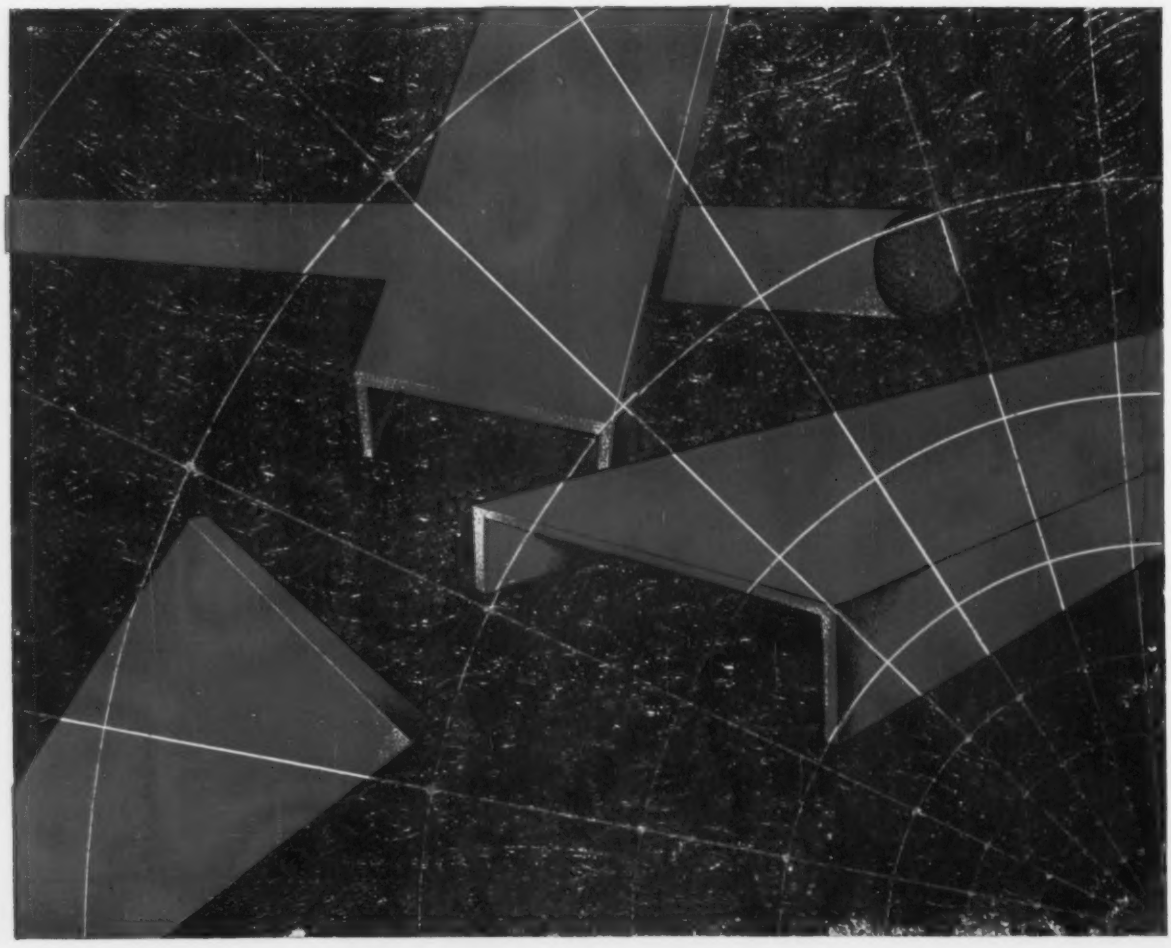

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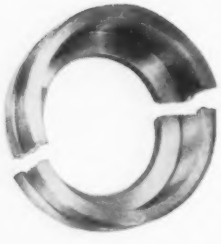
Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other heavy machinery. Manufacturers of Iron, Nodular Iron and Steel Castings and Weldments.

How to avoid alloy steel failures



Ordinary precautions may protect you most of the time. But your luck could run out—and a single alloy steel failure can result in serious loss.

That's why the *extra* precautions of the Ryerson Certified Alloy Steel Plan are important to you. Under this plan you know three vital facts about the alloy steel you order from Ryerson stock:

- **Heat identification** . . . not just type identification, but the positive identification of your particular heat of alloy which has been spark-tested and separately racked to eliminate the possibility of mixed steels.
- **Chemical analysis** . . . not just the chemical range for the type, but the specific analysis of the heat from which your steel was rolled—keyed to your steel's identification.
- **Hardenability** . . . not just the average hardenability for the type of alloy, but the actual test-proved hardenability of your particular heat of steel, as-quenched and at three draw temperatures.

As a result, you can be sure of the steel you get from Ryerson—sure of what it will do . . . and sure of how to heat-treat for desired properties.

This extra protection is yours at no extra cost. So call your nearby Ryerson plant for every alloy steel requirement—and be sure.

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Beryllium for Nose Cones

Defense planners are eyeing pure beryllium as the answer for missile nose cones and leading edges and skins for high-speed planes. It has the high-temperature resistance (1500°C) and strength needed. Problem is still brittleness. At least one contract for research into solving forming and machining problems is underway. Some missile nose cones are reportedly now being produced.

How to Keep Engineers Busy

A major metals producer has just about run out of projects to keep its highly proficient construction engineering department busy. But with its staff painstakingly developed over the years, the company doesn't want to lose them. Its solution is to form a separate corporation with subsidiary status in hopes of getting enough work to keep them prospering.

Watch Mill Operating Rates

Steel service centers are hopefully watching mill operating rates. Many warehousemen feel their business will spurt when ingot production hits 75-pct capacity. They feel mill deliveries will lag decisively at this point and customers will have to turn to service centers for orders involving small quantities and prompt shipment.

Aptitude Key to Production

Are you pretesting your workers? Aptitude testing of workers prior to hiring has boosted productivity so successfully that one state reports their employment testing service will hit a record in 1958 in number of tests administered for manufacturing plants. This is despite the fact that employment in the state fell to the lowest point in several years.

Hot-Rolled Sheet to Tighten

Veteran purchasing agents caution that it's time to watch hot-rolled sheet stocks. Cold-rolled sheet is already a scarce item in several key industrial areas for October delivery. Steel service centers are dangerously low on some gages of the grade. Hot-rolled sheet, unless there is a full auto strike, will begin to tighten in about one week on the same basis, some steel buyers now believe.

Die Forms Tapered Parts

A new draw die with movable segments operated by a constant-pressure hydraulic system forms tapered parts. The die maintains constant ironing and trapping pressure during the draw forming. Variation in material thickness serves as a cam to operate the die segments, thus keeping close tolerances.

Detect A-Bomb Plants

Atomic weapons plants may be reliably detected if U. S. and Russia agree on aerial inspection. New and better scanning devices offer the means. Images projected on a cathode-ray tube are photographed and interpreted. Heat differences between atomic plant and surrounding area can be seen, even if scanning is done at night. Air Force is using the method now.

Speeds Grating Production

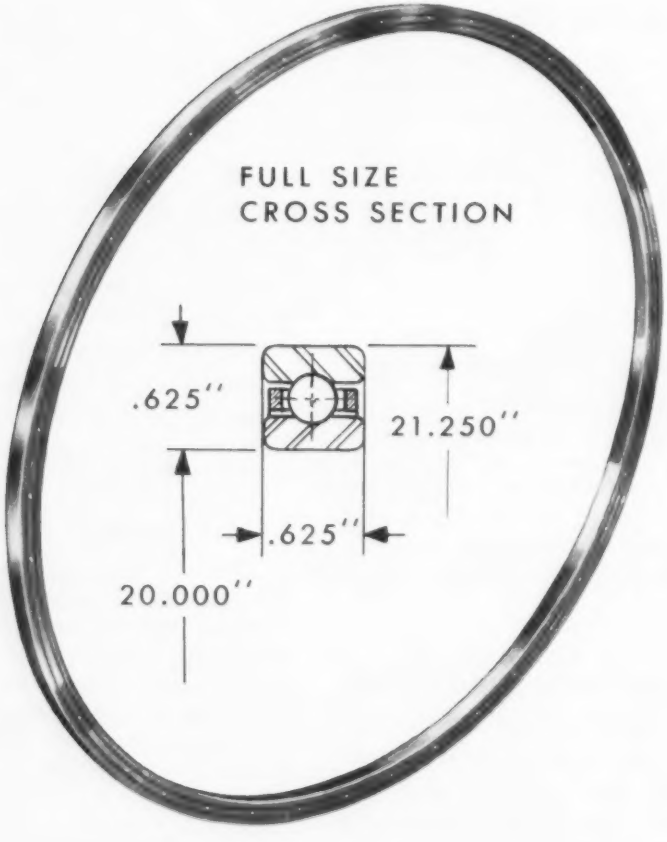
A new machine, said to be the only one of its kind, makes non-skid grating at rates many times higher than by any previous methods. It feeds bars, spaces and preforms them, stamps them to shape and finally welds them into a continuous belt. With one operator doing the work of 35 men, the unit makes stronger and more uniform grating.

Probes Back in Limelight?

There'll be plenty of fireworks popping in congressional investigations soon. Among the subjects to be explored in public hearings held by Senate and House committees: new evidence of labor racketeering; new disclosures of Bernard Goldfine's attempts to pressure federal agencies, new testimony from steel fabricators regarding producers' sales practices.

A TRULY *Featherweight* BALL BEARING

20.000" I. D. x 21.250" O. D. x .625" WIDE



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Cost-Price Squeeze Still Grips Equipment Builders

Pent-up demand is beginning to show through in the machinery and components market.

Many producers, operating in the red, hope for price relief after Jan. 1.—By T. M. Rohan.

▪ The recession of 1958 is passing into history. But in its wake, machinery and component builders are still grappling with a cost-price squeeze that is tighter than ever. Most are still absorbing higher wage and steel costs.

A spot check of producers in this field indicates they aren't motivated by anti-inflation heroics in holding the price line. In most cases, the market simply won't take a price increase. Some price cutting, in fact, is still going on.

It Can't Last—But the pressure is mounting. When the full impact of the business upturn hits the machinery and component builders, price increases are certain to come.

Said one large Cleveland builder: "If the volume picks up, there would have to be an increase because we couldn't absorb the extra cost at higher volume."

Meanwhile, financially well-heeled customers are taking advantage of bargain basement prices to order major capital goods. Large pieces, such as cranes, elephant tools, and material handling systems for automation, are being ordered at 1953-level prices.

Latest Reports—Here is a run down on the state of prices in some major segments of metalworking:

Machine Tools—Volume is lowest since 1950 and prices are holding the line despite added costs. Prices would rise 10 pct if business picks up.

Stampings—Auto and other customers won't take a price increase, and stampers are absorbing until the market tightens. Complex stampings with higher labor factor already up about 3 pct.

Castings—Widespread price cutting and higher foundry business failures make price increases out of the question.

Materials Handling Equipment—No increase in sight.

Road Building Equipment—Government-bid equipment selling for 5-15 pct under published prices and up to 25 pct off in some cases. Major inventories still on hand and no immediate price increase in prospect.

Welding Machinery — Spotty

How It Feels To Be In A Cost-Price Squeeze

Machine Tool Builder:

"We will have to keep absorbing higher costs until the market will justify an increase. We can absorb them now because business is slow. But we couldn't if it picked up."

Crane Builder:

"Lots of well-heeled companies are buying materials handling equipment they hadn't planned on until 1959 or 1960. But they are dealing on price. Some builders are getting premium Korean prices thrown back at them now."

Welding Equipment Maker:

"Welding machine prices won't go up for the next 2-3 months at least. A 300-amp welder is selling for 20 pct under 1940 and electrodes are the same price as then."

Foundry:

"We haven't raised prices since October 1956. Nor have we seen reason to cut prices, although we have found many unjustified cuts as a result of the depressed casting market."

Road Machinery Builder:

"Most roadbuilding equipment manufacturers are being squeezed on profit margins. Discounts up to 25 pct off published prices are being made in Government bidding so a price increase now is not in the works."

price increases of about 10 pct in March were first in several years. Welders in 300 amp size still sell 20 pct below 1940 prices and electrode prices are the same as then due to better design and production techniques.

Rolling Mills — Inquiries heavy, but business spotty. All custom built equipment so prices are largely governed by competitive conditions with escalation clauses for long-lead-time capital equipment. Prices most attractive in years.

Stamping Presses — Industry at 25 pct of capacity and no price increase in sight this year.

Machine tool builders are still treading water, but there is a better market tone.

Getting a more equitable price in the current market is not necessarily their major concern. "Our big worry is that, in case of a national emergency, prices would be frozen at present levels," a Cleveland builder says.

In the Red—Volume of orders in the machine tool industry is at an eight year low and most producers are operating in the red. Net new orders of cutting types through July this year were only $160 million while last year's total was $519 million and 1956 was $924. Shipments through July were $268 million against last year's total of $843 million according to figures of the National Machine Tool Builders Assn., Cleveland.

Some firms are already thinking in terms of a 2½ to 3 pct increase about the end of this year, regardless of the state of business. Others feel that if an upturn justifies it, prices will increase about 10 pct. The last general increase was about 1½ years ago.

Auto Slump Hurts—In the highly competitive stamping industry, only a few of the more complicated multi-stage stampings have increased. Close competition for the small amount of available business has kept the rest down.

The slow auto business has also played havoc with stampers.

"Some of our members have orders for auto stampings going back to January on which there have been no releases so far," says H. A. Daschner, managing director of the Pressed Metal Institute in Cleveland. "In many cases the tools are all in but no production parts made yet although this is supposed to be the height of the new-model build-up."

Customers Check Up—Stampers serving the auto industry face a brick wall of opposition. One major auto parts maker in Cleveland sent out letters early this year to stampers and others saying no price increases would be tolerated.

In other cases customers watch the amount of steel the stampers have on hand and will grant no price increase until older, lower priced steel is used up. Some also insist on complete breakdowns of all extras and other components in the price.

Other Factors — If auto firms make their labor settlements and put out releases on stampings already ordered, prices of the stampings would undoubtedly have to go up. Profits on auto stampings depend more on continued volume than a mark-up, so materials and labor are larger increments.

Many stampers too, have lagged on buying new equipment so that they penalize themselves in bidding with 400 stroke per minute press against a 600.

Founders' Problems—In the foundry business, industry leaders are still trying to halt a wave of price cutting that has gone on against all counsel of industry leaders. In some cases proprietary products are helping foundries stay in the black. In others, captive foundries are being closed and independents are getting the business.

"We haven't raised prices since October, 1956, says Peter R. Rentschler, vice president of Hamilton Foundry and Machine Co., Hamilton, O. "Nor have we seen reason to cut prices although we have found many unjustified cuts as a result of the depressed market."

Failures Higher—Foundry closings and failures are also well ahead of a year ago, according to a spokesman for the Gray Iron Founders Society, Cleveland. Their figures indicate over 100 this year through August compared to 83 in all of 1957.

One saving factor for foundry prices is that pig iron prices did not increase with steel this year although scrap has gone up. Some high strength castings which normally sell for 35-40 cents per lb are selling for 10 cents in Ohio.

Price Bait — Materials handling equipment makers are continuing to absorb increased costs of labor and material because of competition. But attractive prices are bringing out some new business.

"Lot's of well-heeled companies are buying new materials handling equipment they hadn't planned on until 1959 or 1960," says a Cleveland hoist and crane builder. "But the customers are all dealing on price. Some builders are getting premium Korean prices thrown back at them now and have to swallow it.

Lift Trucks Improve—Industrial lift truck prices have been held down by competition but could go up slightly in several months. There are indications that the corner was turned in August and a moderate come-back is now under way. Many builders have cut personnel to new lows and are barely making expenses.

Roadbuilding equipment makers have generally worked down the huge inventory built up last year in anticipation of the national roadbuilding program. A late summer flurry has helped pare the inventory to manageable levels but its still excessive.

Price Cutting Area—There is still price cutting in road equipment of up to 25 pct off published list prices on government bids. But 5 to 15 pct is the more normal cut. So a price increase now seems out of the question. Business generally is still off 15-40 pct from normal.

Wage settlements are not uniform as in the auto industry so price adjustments to reflect wage hikes generally will be based on individual conditions as well as competition. Purchased components of large road scrapers generally comprise the majority of the cost and these prices can only be held down competitively.

1940 Levels — Welding equipment prices are not expected to increase for the next two or three months at least, says Lincoln Electric Co., Cleveland, industry leader There was a price adjustment in March this year which included some increases of up to 10-15 pct and some decreases as well. The last general increase was several years ago.

A Lincoln spokesman pointed out that 300 amp welders are selling for 20 pct less than in 1940 and electrodes for the same price due to modern machinery, better methods and competition.

Pent-Up Demand—Rolling mill prices are up slightly in isolated conditions but competition is holding the general level down. Inquiries generally are flowing well so that builders believe there is a pent-up demand which a business pick-up would spring loose. Rolling mill salesmen are urging steel mills to put in new capital equipment now because of good price and delivery and sufficient time to install.

Higher steel prices are a lesser increment in rolling mills so wage and market conditions largely set the level.

Small Presses Hurting — Small stamping presses are also absorbing higher costs because they are operating at under 25 pct of industry capacity and living off repair and tool business sidelines. Many are still operating in the red.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

HEAT TO JUICE: New thermoelectric materials are prepared on a lab scale in this special furnace at Westinghouse Research Laboratories.

NewCeramicsConvert Heat to Electricity

▪ New materials discovered by Westinghouse scientists which can convert heat directly to electricity apparently are not too far from practical use.

Dr. Clarence Zener, director of Westinghouse research, reports that "for specialized applications, where compactness, light weight and simplicity are more important than efficiency, these new thermoelectric materials offer promise for practical applications requiring small quantities of electric power."

Mixed Valence—The new materials, discovered by scientists at Westinghouse Research Laboratories, are ceramics, made up of nickel oxide manganese oxide, and lithium-cobalt oxides. They are called "mixed valence compounds of the transition metals."

The thermoelectric materials produce electricity simply, silently, and without moving parts of any kind, the company reports.

Uses Hinted — First uses will probably be in running small electric motors, where moving parts are undesirable. The materials are the first "solid state" thermoelectric materials capable of high temperature operation, a prime requirement of materials useful for power generation. For experimental purposes, the powdery materials are pressed into pellets.

Firebird Pushes Automatic Ride

▪ With more advanced automotive engineering features crammed into its latest experimental gas turbine engine automobile, General Motors' Firebird III gives the impression that a "count-down" is the best way to start it. Yet it starts simply by pushing a starter button.

The two passenger, pearlescent silver-gold fiber glass body, and all it contains, are straight from the space-age—in concept, engineering, mechanics and design.

Automatic Controls—A single stick control system eliminates the conventional steering wheel, brake pedal and accelerator, and gearshift control. Electronics, transistors and computors are used to guide the car automatically and control passenger comfort.

The automatic controls may be the key feature in the Firebird III. GM is now firmly behind the principle in long-range planning of cars and highways of the future. It will no doubt use the car as a means of dramatizing the concept.

Firebird I, first shown in 1954, served to introduce the gas turbine engine to passenger cars. A year later Firebird II emphasized styling. Firebird III improves on both, but is primarily "an experiment in control."

How to Drive It—A wing-shaped "unicontrol" handle, mounted atop a 4-in. control stick located between the two passenger seats, is easily operated by either passenger. When rotated 20 degrees either right or left of center, it puts the car in reverse. An 80 degree twist puts the transmission in park. In its normal position the car is in drive.

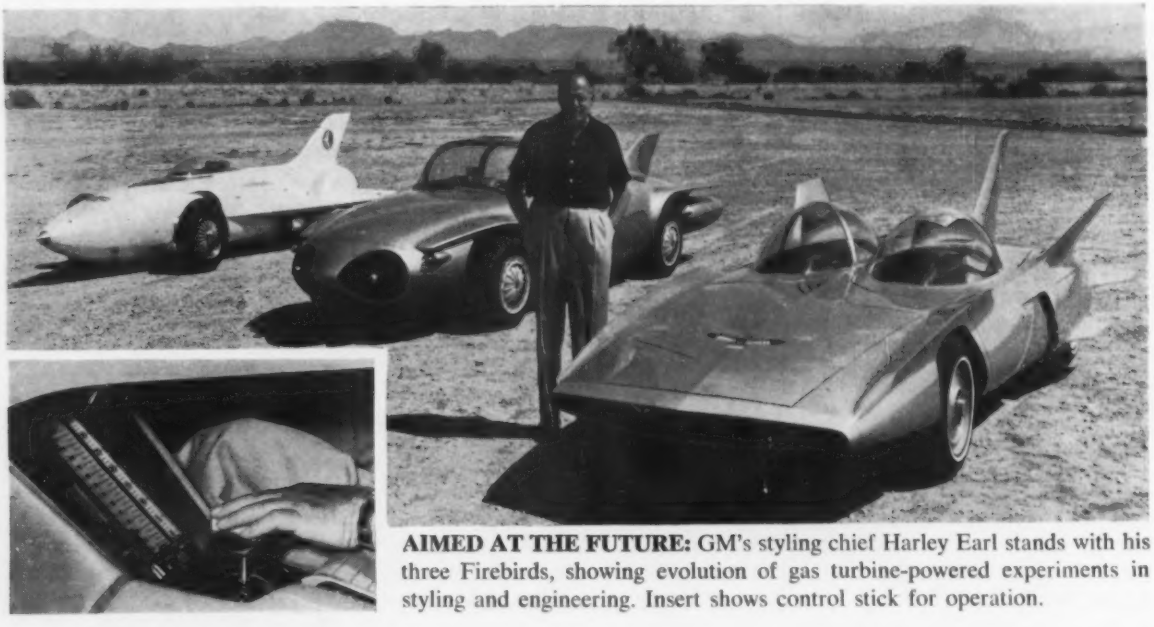
Push the Unicontrol stick forward to accelerate, the farther the faster; pulling back on it applies the brakes. Deflect it right or left and the wheels turn in that direction. A button on the handle actuates a downhill retarder unit.

No Hands—Selection buttons for "Autoguide" and "Cruisecontrol" are located on an instrument panel just ahead of the control stick. Autoguide takes over steering control by electronically following a low frequency powered cable in the highway. Cruisecontrol maintains a constant pre-set road speed. The driver may push either button, retaining manual steering or acceleration only in the Unicontrol stick, or both and put the car under completely automatic control.

GM won't reveal "performance" characteristics (acceleration and top speed) turned out by the improved gas turbine engine, which it says is lighter (less than 600 lb with accessories), more compact (32.1 in. by 23.8 in. vs. 39.8 in. by 24.5 in. for Firebird II), and 10 pct more powerful with its 225 hp.

Auxiliary Power—A 10 hp aluminum engine, located in the 'bird's nose, supplies electrical and hydraulic power for all the car's accessories. In addition, it drives a 110-volt generator.

Interconnected air-oil springs are used in the suspension. Wheel and brake drums are combined in a single aluminum alloy casting. Special drag brakes at the rear of the car help slow the car at high speeds.



AIMED AT THE FUTURE: GM's styling chief Harley Earl stands with his three Firebirds, showing evolution of gas turbine-powered experiments in styling and engineering. Insert shows control stick for operation.

USS Is Fourth Largest Company in Assets

▪ Richest nonfinancial U. S. corporation is American Telephone & Telegraph Co., according to a new analysis of the nation's 100 largest nonfinancial companies by the First National City Bank of New York.

The phone company reported assets of $17.6 billion at the end of 1957, more than double those of its nearest competitor for top rank, Standard Oil of New Jersey. Standard has assets of $8.7 billion, while General Motors holds third place with $6.8 billion. In fourth position is U. S. Steel, with assets of $4 billion.

Steelmakers Rank — The bank's listing includes 56 manufacturing companies, 3 retail trade organizations, 16 transportation firms (all railroads), and 25 public utilities.

Ten steel producers, including Ford Motor Co. and International Harvester Co., are counted in the hundred. But only U. S. Steel and Ford made the first team of the nation's top ten corporations. And those two, plus Bethlehem and International Harvester, are the only steel producers with assets of over $1 billion.

Steel Company Assets — Of all 100 companies, 43 have assets over the billion mark, with 24 in the 56 company manufacturing division. The remaining seven steel companies range from Republic Steel at $930 million to Youngstown Sheet & Tube at $636 million. Assets of the 100 companies range from $587 million to $17 billion, for an aggregate total of $148 billion.

The 100 top firms last year employed a total of 6.2 million people.

Where Income Goes—Gross income for the 100 companies totaled $124 billion last year, with 36 companies ringing up more than $1 billion. But expenses and taxes took 92.3 cents of the sales dollar, leaving 7.7 cents as net income. Taxes alone ate up almost $18 billion worth of sales income.

PRICE JIGSAW: Under previous multiple zoning system customers of Boston area distributor paid varying prices. Now many are grouped in. . .

NEW SINGLE ZONE: All buyers within this area, except those in Cape Cod section at lower right, are quoted same delivered price on shipments.

Service Center Tries Single Zone Pricing

▪ Multiple zone pricing for many of its customers has been discarded by a Boston area steel service center.

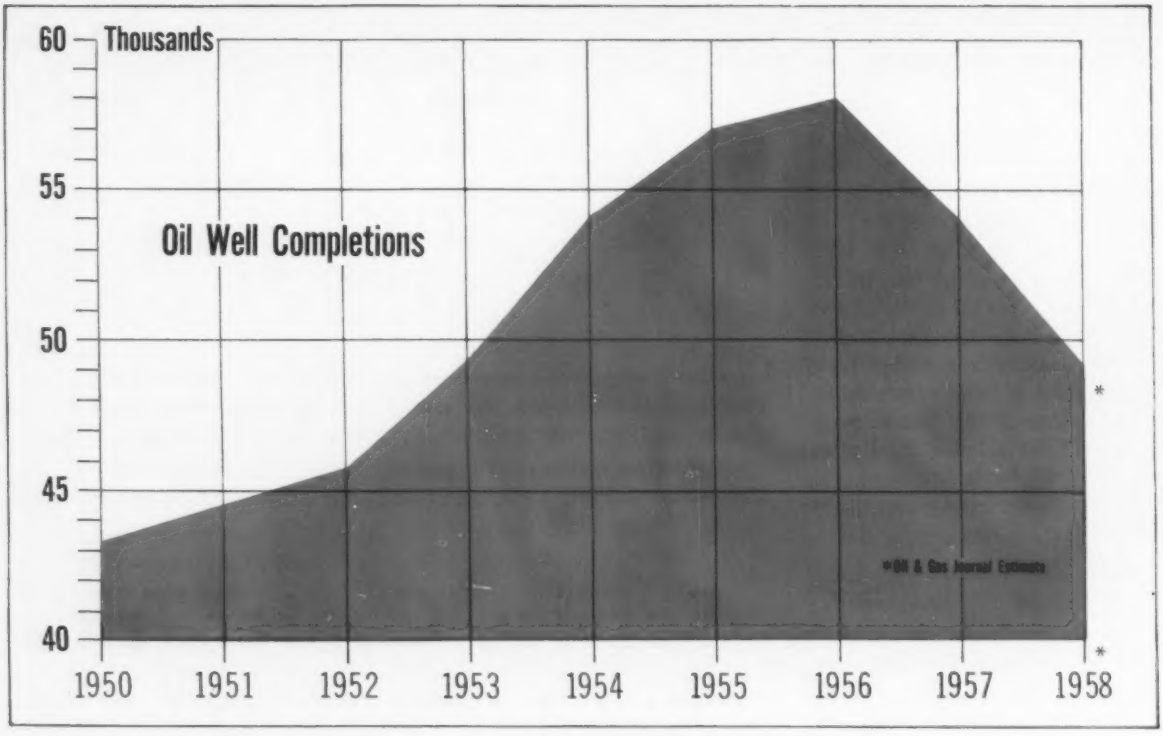
In its place the distributor—W. E. Clark & Co., Everett, Mass. — has substituted one uniform pricing zone where all buyers, regardless of location, pay the same price. Within this new eastern pricing area, which includes eastern and central Massachusetts, all of Rhode Island, and two counties in New Hampshire, there are no differing prices for metropolitan and country areas.

One Price for All—All buyers are quoted the same delivered price on hot-rolled shipments no matter how far in the area the steel must be transported. The new system gives all buyers in the zone an equitable delivered price, according to Maynard L. Diamond, president of Clark.

"Before the change," he says, "there were cases where two users less than several miles apart had cost differences of as much as $4 a ton on purchased steel. With the new blanket pricing zone these inequities are eliminated," Mr. Diamond points out.

Former Price Jigsaw — He mentions some of the problems under the old five-zone pricing setup. While three buyers (see solid arrow) might be located close together, each paid a different price for the same shipment of steel. And on identical orders for other buyers (see dotted arrow) customer at the right, although closer to Boston shipping point, paid the highest price. However buyer at the left, farthest from Boston, but closer to Worcester zoning point, paid the lowest price of the three.

Clark's new uniform pricing zone extends westward more than 60 miles and northward about 70 miles. It doesn't include customers in western Massachusetts, Vermont, and northern New Hampshire where prices previously in effect are unchanged.



Are Drillers Playing With Fire?

Oil industry purchasers have been burned before by oil country goods shortages.

And current buying plans indicate they may be headed that way again.—By K. W. Bennett.

▪ The petroleum industry, still in the throes of the heaviest steel inventory reduction in its history, hasn't yet slapped on the brakes. Its steel inventories are still sinking.

In defiance of every forecasting rule of thumb, oil country goods sales continue to drag their feet. For steel market forecasters, it's a growing nightmare to find the reason why.

Figures Contradict—The number of rotary drilling rigs in action moved up to 1900 in August. Refinery runs, at the end of August, were at an eleven-month high. The petroleum industry moved into the period of the year when drillers do the lion's share of their annual search for oil.

But despite two buying spurts in June and July when oil industry buyers moved to beat the steel price increase, there has been little attempt to halt the inventory cuts.

Tonnages Drop — The ratio of tons of steel purchased to number of wells drilled has fallen from a seven-year average of 44 tons per well to a seven-year low of 24.7 tons per well.

While drilling has fallen off 10 to 11 pct in the first half of this year compared with year-ago figures, oil country purchases have dropped 65.5 pct. First half tonnages hit only 545,405 tons this year compared with 1,584,909 tons last year.

Two-Months Stocks — Market sources estimate that oil country inventories are down to about 300,000 to 330,000 tons by mid-1958. This is a little under two months' supply. These figures seem to belie the consistent reports that consumers are overstocked.

It may also explain why forecasters are baffled when discussing the unwillingness of oil country consumers to rebuild inventories.

There are glimmerings that scattered buyers are beginning to worry. One mill reports buyers talk of longer lead times.

Once Burned—Purchasing agents, although badly burned by this steel category when it has dried up in the past, are not eager to extend their purchases. Present indications indicate a 9.5 pct drop in well drilling in the second half against a 30 to 40 pct drop in steel purchases.

Salt bath heat treating mechanization?

A Mechanized Desanding Operation

This fully automatic salt bath line for electrolytic desanding of gray iron castings was designed and supplied by Ajax. Dozens of other Ajax mechanized installations are used for hardening, carburizing, martempering, austempering, annealing and other heat treating processes.

72-Page Guide to Ajax Salt Baths

Write on company stationery for your copy. Includes dozens of illustrations of automatic and semi-automatic Ajax installations. Covers modern salt bath equipment and methods for Aluminum Heat Treatment; Annealing; Austempering; Billet Heating; Brazing; Carburizing; Case Hardening; Cleaning and Descaling; Cyaniding; Drawing; Hardening; Quenching; Martempering; Nitriding; Tempering and many more. Ask for Ajax Catalog 117A.

AJAX HAS THE ANSWERS!

The chief product of Ajax is not simply the world's largest, most versatile line of salt bath furnaces. More particularly, it is an unmatched fund of accumulated experience in applying salt bath operations to best possible advantage. Nowhere is this more evident than in heat treating mechanization or automation.

In hundreds of installations, large and small, complete heat treating operations are handled automatically by conveyorized salt bath set-ups engineered from beginning to end by Ajax. From single in-line furnaces to elaborate combinations, each operation is automatically controlled and operated for maximum production economy and product quality.

When planning for heat treating mechanization, it pays to consult Ajax!

AJAX ELECTRIC COMPANY
904 Frankford Avenue
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Associates: Ajax Electrothermic Corp. Ajax Engineering Corp.

AJAX
HULTGREN

SALT BATH FURNACES
Internally heated electric and gas fired types

Typical 1958 R and D Budgets

Industry Group	Companies Reporting	1958 Budget Compared With 1957 Budget			1957 Budget % of Sales
		Up	Same	Down	
Agricultural Machinery	5	2	3	0	1.3
Aircraft	20	7	8	5	4.4
Autos	7	3	2	2	5.0
Construction Machinery	9	2	5	2	1.5
Electrical Machinery	62	23	20	19	4.8
Engines and Turbines	15	4	1	10	4.0
Fabricated Metal Products	68	23	21	24	2.1
Industrial Machinery	33	12	12	9	2.9
Nonferrous Metals	19	7	6	6	2.0
Steel	16	7	6	3	1.0

R and D Budgets Keep Growing

American business is budgeting in 1958 four pct more money for research and development than in 1957, a new American Management Assn. study shows.

Of the 24 industries covered in the 800-company survey, 18 showed an increase for R&D ranging from 2 pct to 26 pct (transportation equipment). Six industries showed a decline in research spending; greatest cut was 15 pct by the construction machinery industry. Other industries showing marked increases were service machinery, 13.3 pct; chemicals, 10 pct; and stone, clay and glass, 7.1 pct. Significant cuts were reported for engines and turbines, 9 pct, and autos, 6 pct.

Research and development spending in 1957 averaged 2.8 pct of sales, the survey showed. Industries with highest percentages were instruments, 5.2 pct; autos, 5 pct; electrical machinery, 4.8 pct; and aircraft, 4.4 pct.

According to Dr. Philip R. Marvin, manager of AMA's Research & Development Div., the figures indicate:

1. In most cases budgets are still tied to near-term expectations; 2. An attempt is being made to offset cutbacks by greater selectivity in choice of projects and operating economies; and 3. Emphasis is on development of items "close to the shipping-room door."

Air Force Will Lean More on Industry

▪ Production of even the most complex weapons and equipment can be handled by private industrial plants, the Air Force emphasizes.

Where there is enough capacity, the service says, they will not put up money for plant expansions. The purpose: To prevent creation of a special, government-owned plant system for defense production.

If Needed—The Air Force informs its suppliers it will recommend against use of contractor funds for enlarging plants—if there are suitable facilities elsewhere. But if defense needs make government funding necessary, Air Force money can be used to expand or modernize.

Contractors are given this guidance on how the Air Force will proceed:

Procedure — 1) Screen carefully any procurement orders or re-orders involving government-owned plants. If private subcontractors can turn out the items at reasonable cost, the Air Force will reject continued use of government plants.

2) Review work statements to assure full use of private subcontracting capability.

3) Authorize new facilities' spending on an "absolute minimum" basis in stages past research and development.

4) Depend on prime contractors normally, to reach output rate capability without Air Force facilities.

5) Dispose of Air Force industrial plants where and when possible.

Basic to all its actions is the Armed Services Procurement Regulation policy, the Air Force points out. Contractors will provide all industrial capacity for performance of contracts, except when government assistance is absolutely necessary.

Social Security Law To Take Bigger Bite

Employers should start planning now to pay the higher federal social security tax that will be levied next Jan. 1.

Management will be stuck with a tax of 2½ pct on the first $4800 earned by each covered employee under the new law. The same amount, $120 per year, must also be taken from the employee's earnings. Self-employed persons earning at least $4800 a year will pay $180

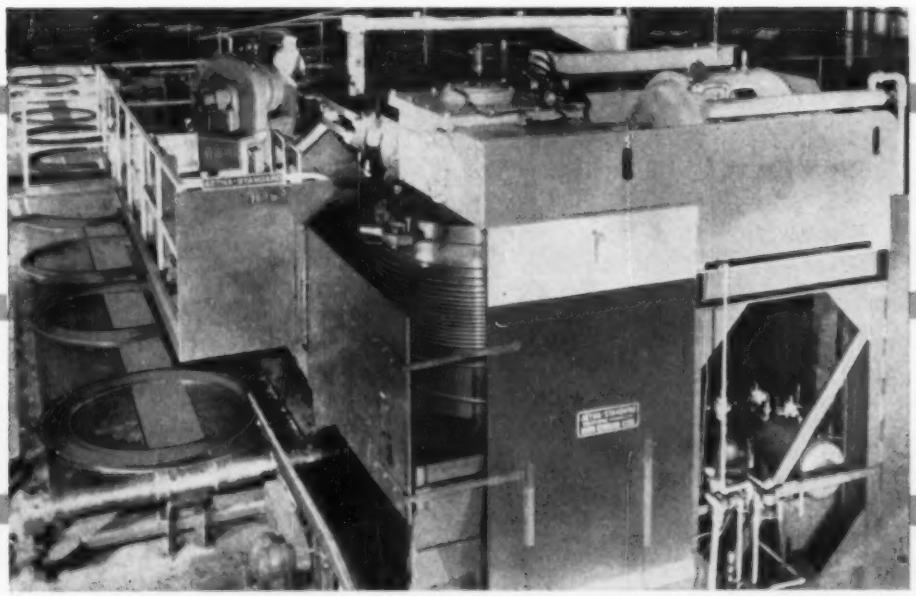
Payoff—The new law will start bigger benefit payments to 12 million persons in February. Average increase for retired men and women, their dependents, and survivors will be 7 pct. Minimum boost will be $3 to those now getting $30 per month.

For the first time, dependents of disabled workers can draw social security checks. They will be paid the amounts they would get if he were 65 and receiving retirement benefits from the fund.

ECONOMICAL PRODUCTION

OF THIN WALL, SMALL

DIAMETER TUBING



One of many Bull Block installations made by Aetna-Standard. Aetna's Bull Blocks range in size from 12" in diameter to 60" in diameter at speeds up to 2,000 feet per minute. Types—Horizontal, Inverted or Vertical.

Coil handling is most important for economy in production with a Bull Block. Aetna's engineers have concentrated on the method of moving the tube from the drum after drawing and the method of transferring the material back to the block. The payoff tray, the ease of entry, and the ease of gripping, ungripping and loading add to the economy of operation.

Our hydraulic feed gives absolute accuracy in traversing the die to the drum during drawing. Unique electrical controls give the operator instant control of speeds from zero to 2,000 feet per minute.

There's nothing new about the use of Bull Blocks. They have been in use for many years. But the design remained unchanged until Aetna-Standard, a pioneer in Drawbenches and other cold draw equipment, completely redesigned the Bull Block and made it a practical unit for high-speed production of small diameter, thin wall tubing. We have made installations for most of the major producers of copper, brass and aluminum tubing.

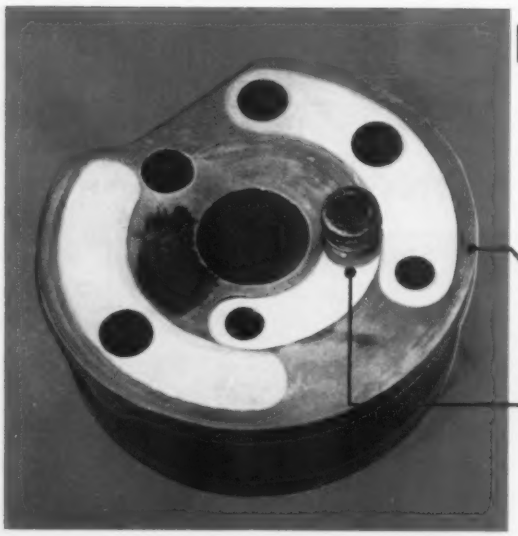
AETNA • STANDARD

THE AETNA - STANDARD ENGINEERING COMPANY

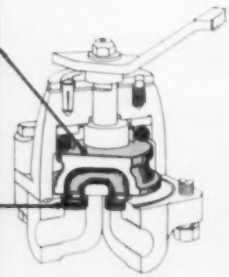
GENERAL OFFICES: PITTSBURGH, PA. • PLANTS: ELLWOOD CITY, PA., WARREN, OHIO • RESEARCH LABORATORY: AKRON, OHIO

CONTINUOUS GALVANIZING LINES • CONTINUOUS ANNEALING LINES • CONTINUOUS ELECTROLYTIC TINNING LINES • SIDE TRIMMING AND SHEAR LINES AND OTHER FINISHING EQUIPMENT • CONTINUOUS BUTT WELD PIPE MILLS • SEAMLESS TUBE MILLS • DRAWBENCHES AND OTHER COLD DRAW EQUIPMENT • ROLLS AND CASTINGS • EXTRUDERS, MILLS, PRESSES FOR RUBBER, PLASTIC AND CHEMICAL

IN HIGH PRESSURE WATER SERVICE (3000 to 10,000 P.S.I.) ONLY BARKSDALE VALVES HAVE LASTED LIKE THIS WITHOUT MAINTENANCE



Note the mirrorlike sealing surfaces on this Dual Pressure Valve rotor after 4 years of service.



6000 P.S.I. Four-Way Standard Porting

1856 MODELS TO FIT YOUR NEEDS

4-Way, Manipulator, Dual pressure and Shut-off Valves from ¼" to 1½" N.P.T.

3000 P.S.I. Manipulator Manifold Porting

3000 P.S.I. Four-Way Straight Porting

In steel mills, on extrusion presses, die casting machines, rubber and plastic molding presses and on blowout preventers, they have performed without maintenance longer than any other type of valve.

THIS LONG, MAINTENANCE-FREE SERVICE

is possible because the metal-to-metal sealing surfaces are self-aligning and actually improve with use through continued lapping action. Sealing qualities do not diminish because a spring compensates for the wear.

DIRT CANNOT SCORE SEALS

because flow is through "Shear-Seals," sealing surfaces remain in constant intimate contact.

COMPLETE CONTROL OF YOUR CIRCUIT

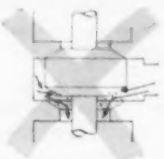
because "Shear-Seal" design is excellent for throttling. It permits opening to any desired degree of flow – smooth action without fighting fluid pressure.

The "Shear-Seal" action eliminates line surges and the round tubular flow passages provide more flow and velocity capacity (up to 60 ft. per sec.) because they are unobstructed by spools or poppets.

This is why we don't use

SPOOL OR POPPET DESIGN

POPPETS SCORE



SPOOLS LEAK

6000 P.S.I. Dual Pressure Standard Porting

3000 P.S.I. Shut-Off

10,000 P.S.I. Shut-Off

"Shear-Seal"

Write for Catalog 58-59

barksdale valves CONTROL VALVE DIVISION

5125 ALCOA AVENUE • LOS ANGELES 58, CALIFORNIA

Leonard Larson

Building New Mills and New Men

Republic's Larson is a mill engineer concerned with developing young engineers and better steel mills.

He's been able to further this aim as head of the Assn. of Iron and Steel Engineers.

▪ Many men with 40 years behind them in industry like to talk of the good old days and how much simpler it was to get things done then. Not so with Leonard Larson, chief engineer at Republic Steel's Cleveland District, and retiring president of the Association of Iron and Steel Engineers.

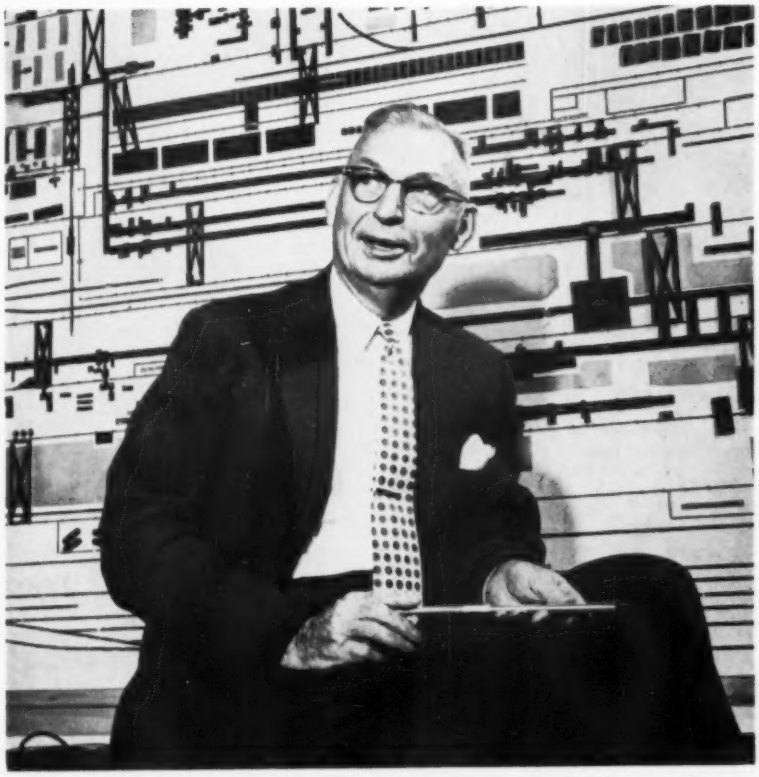
He is far more concerned with tomorrow. Younger engineers who will be running the nation's steel mills in the years ahead are in a special class with him.

A Perfect Example—"One of the worst things an engineer can do now is fall behind the times and think a process or machine can't be improved," he warns the up-and-comers. Mr. Larson picks out an example from his own experience:

"Years ago we put in a new electric furnace at Massillon with the fanciest controls and figured it was close to perfect. In 10 years the furnace was obsolete and we ripped it out to make room for a new one."

Mr. Larson advanced to the presidency of AISE by way of the education committee, which works with younger engineers. During his year in the top office he visited the association's 13 regional chapters, encouraging younger men to join. AISE membership now totals 8000.

Steel Background—Leonard Larson grew up with the smell of blast furnace smoke in his nostrils. Born in Erie, Pa., he was raised in Pittsburgh, attended Carnegie Tech, and in 1917 started in the steel industry as a draftsman for Central Steel Co. at Massillon, O., a Republic predecessor.

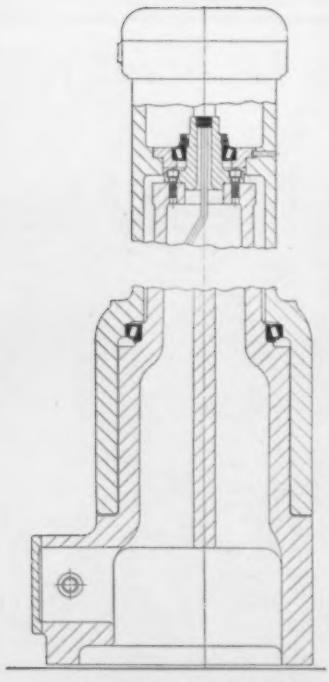


LEONARD LARSON: Provision for tomorrow is a leading problem.

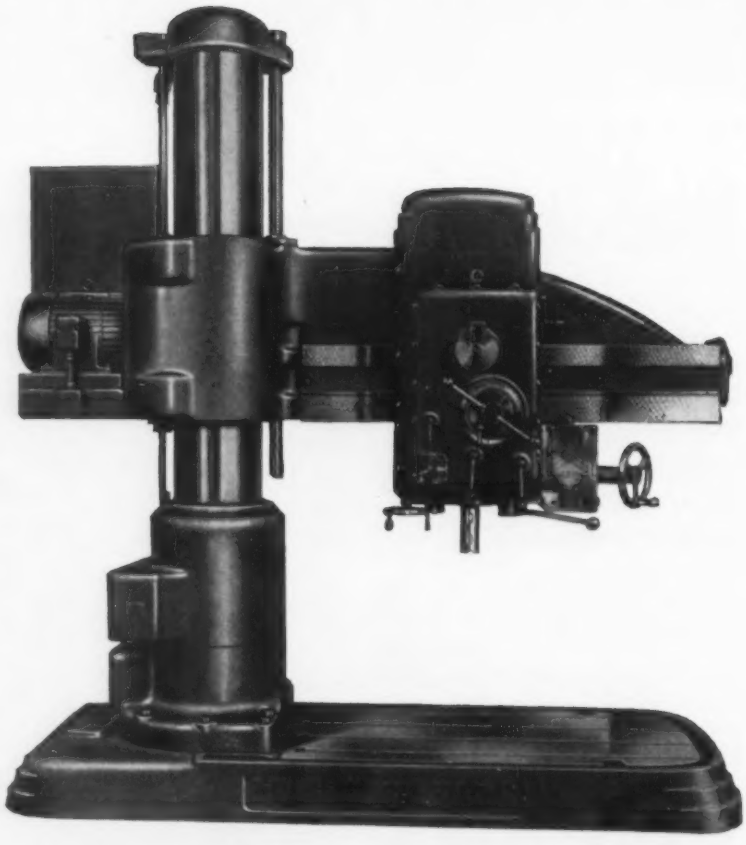
During his 19 years as chief engineer at Republic's Cleveland district mill, about $400 million in capital investment has gone into the plant. One expansion program in 1952 added 672,000 tons of annual ingot capacity to the mill that was already cramped for space.

Fancy Engineering Needed—In steel mill engineering, provision for tomorrow in today's mills is one of the leading problems, Mr. Larson feels. New mills are so costly that some of the fanciest engineering must be done to fit in more machinery.

But the biggest job still ahead for steel mill engineers is improving quality at faster production rates, he says. In automotive sheet steel, for instance, the next immediate target is cold-rolled sheet which can be painted without surface conditioning. This is one of many projected improvements in steelmaking that weren't given a thought in the "good old days."



How **THE AMERICAN TOOL WORKS CO.** mounts column of 32-speed Hole Wizard Radial on 2 Timken bearings to increase rigidity 50%. Spindle and transmission use 11 more Timken bearings.



This radial drill has 50% more rigidity with column mounted on Timken® bearings

TO resist stresses and cut arm deflection in half, the column unit of this 32-speed Hole Wizard Radial is mounted on two Timken® tapered roller bearings. With a large, preloaded Timken bearing at top and bottom, The American Tool Works Company gives the column and sleeve the rigidity of a single piece. This results in greater accuracy and longer cutting tool life, permits higher speeds and coarser feeds.

HOW COLUMN IS HELD RIGID. Timken bearings keep the column unit in positive alignment. Their tapered design lets them take both thrust and radial loads in any combination. And full line contact between rollers and races gives Timken bearings load-carrying capacity to spare.

HEAVY SHOCKS ABSORBED. Rollers and races of Timken bearings are case-carburized to give them hard, wear-resistant surfaces over tough, shock-resistant cores. They reduce maintenance.

FRICTION VIRTUALLY ELIMINATED. Timken bearings run smoother, last longer, because they're geometrically designed for true rolling motion—and precision-made to live up to their design. We even make our own electric furnace, fine alloy steel—the only American bearing maker who does.

So whether you buy or build machines, it pays to specify bearings trademarked "TIMKEN". The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

See us at the 1958 IRON & STEEL EXPOSITION
PUBLIC AUDITORIUM • CLEVELAND, OHIO
SEPT. 23-26, BOOTHS 134, 135, 136, 137

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS ROLL THE LOAD

Let's Win the Economic Cold War

The recent American steel and iron mission to the Soviet Union brought back more than new knowledge of Russia's steelmaking proficiency.

More important, it gained an insight into Russia's growing economic strength and the dangers it poses for the West.

The time for complacency has long passed. We must act now to assess the Soviet economic threat and decide what should be done about it.

• Last week The IRON AGE brought you a first-hand report of the growing power of Soviet industry. It was based upon the inspection tour of a 19-man American steel and iron ore study group which spent a month in Russian steel plants and iron mines during this past summer.

In the words of Edward L. Ryerson, chief of the delegation, "We did not quite appreciate how much they had done in a relatively short time in the development of steel."

The men who were impressed are not neophytes in steel; theirs are some of the best-known names in management, research, production and labor relations in the steel industry of the United States.

What Were the Results? — To date the trip has apparently had two results, one intangible, one specific. As a good-will mission designed to ease some of the tensions that lead to outright war, there is little doubt the American steel men did their part.

Specific findings which will benefit American steelmakers certainly more than covered the cost of the trip in time, effort and expense.

More Important — The trip should have another effect—and a very significant one. What the delegates found out about Soviet steel should once and for all scotch the notion that Russia is weak industrially. Without the knowledge that Soviet steel has tripled its production in 10 years by using equipment that definitely impressed top-notch American steelmakers we might have deluded ourselves. We might have continued to assume that the known weaknesses in agriculture and consumer goods in Russia would prevent communism from being a real economic threat to the free world.

We might have assumed that the Soviet people would soon rise up and overthrow their masters. It was once fashionable to hope for just that. But the facts are that Russian workers are pushing hard for production and for productivity too.

Labor, apparently willingly, is doing its share in the USSR.

We might have assumed that the entire economy would collapse because of internal pressures, different social levels, lack of adequate transportation, housing. It's possible, but it would be stupid to count on it.

Stop Wishful Thinking—No, we can no longer afford to assume these things.

For in addition to what we know of Soviet steel, we have also learned that her machine tool production is probably twice that of the United States and Great Britain combined at the present time. These two industries furnish a solid foundation for Russia's economic war against the West.

What Can We Do About It?—Let's begin by recognizing that this is war. Economic war, if you like; a war not of our choosing, but one designed to ruin us nonetheless.

In spite of our efforts to merchandise the American way of life our stock is selling at a new low in the underdeveloped countries of the world. Without realizing the danger, these peoples are listening to the siren song of Soviet salesmanship.

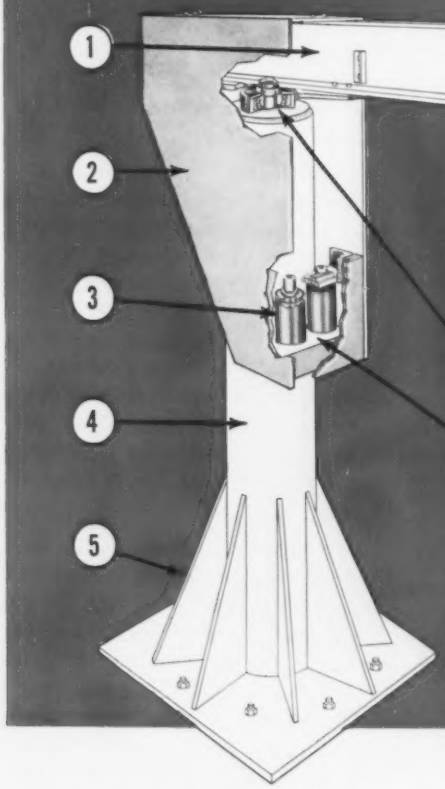
United Effort Needed—We must make a national effort to reverse this trend before it is too late. It will not be easy and success will not come cheaply. If we continue to insist on guns and butter plus pie in the sky we risk becoming dirt under Communist boots.

We must maintain our military defenses and get ready for the sacrifices of the second-front economic war too.

Up to the White House—We urge that the President of the United States give serious thought to appointing a top-level commission. This commission would be made up of representatives of government, management and labor. Its task would be twofold: (1) Assess the Soviet economic threat in terms of what it will mean next year, and five, ten or more years from now; and (2) draw up a set of recommendations for action to counter that threat.

With the facts before them it would be then up to Congress and the American people to decide the price they are willing to pay to preserve their freedom. We think that once they have the full facts there will be little argument over the price.—**G. F. Sullivan,** Editor.

move loads easier...



ON CHICAGO TRAMRAIL JIB CRANES

EXCLUSIVE!
2-Point Floating Suspension Makes the BIG DIFFERENCE in Efficiency

Model 541
500 lbs. to 5 ton capacities.

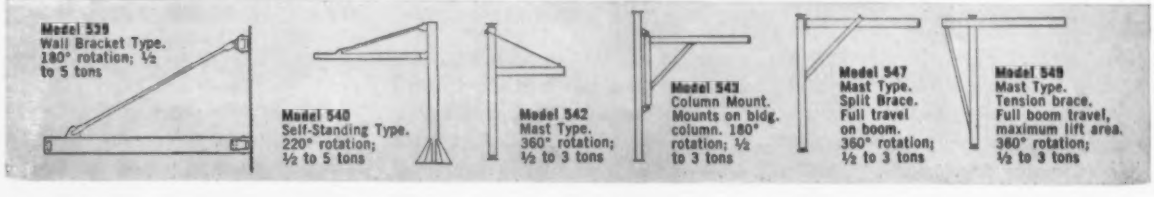
1. **High carbon, hydraulically straightened Beam designed to accommodate heavy duty electric hoists.**
2. **Rigid box construction to insure minimum deflection.**
3. **Bottom roller assembly adjustable for leveling boom.**
4. **Heavy seamless steel column.**
5. **Numerous heavy steel gusset plates welded to column and base provide accurate alignment between column and base.**

Free and easy boom swing is a designed-in characteristic of every Chicago Tramrail Jib Crane. For example, the 2-point suspension used in the Model 541 Jib Crane literally floats the boom through its 360° swing — makes heavy load handling a fast, easy job.

Two bottom load carrying rollers, equipped with heavy duty precision ball bearings, engage and bear on the surface of the vertical column; the top bearing is a precision radial and thrust bearing. This combination assures minimum drag and free boom rotation.

All structural and mechanical parts of Chicago Tramrail Jib Cranes are designed to withstand loads which include heavy duty electric hoists and 25% impact. Every detail of these cranes is designed and built to insure fast, efficient, and safe load handling. That's why you see more Chicago Tramrail Jib Cranes at work . . . and more being installed every day.

Chicago Tramrail Jib Cranes are made in more than 12 types; capacities to 7½ tons, spans to 22 ft., with heights and mounting details to suit your application. Write for complete Jib Crane Catalog.



CHICAGO TRAMRAIL CORPORATION
1312 S. Kostner, Chicago 23, Illinois

Steel Forecast: Look for Record Output Between 1959-1962

This appraisal of the steel market is based on an interview with Thomas Dimond, economist and steel analyst.

Q. Mr. Dimond, in 1956 you saw the possibility of a serious recession in steel and said so in your article in our January 3, 1957 issue —how do you feel about a recession or depression in the coming five years?

A. The steel industry is recovering from its worst recession since World War II. I think we can now look forward to a new period of expansion in steel production which should last two or three years.

In fact, steel production is likely to set a new all-time record in one or more of the years 1959-62. However, I would not rule out the possibility of another steel recession in the coming five years.

Steel is not so much a prince or pauper industry as it was. But in analyzing steel demand or projecting steel production, we have to take into account the cyclical character of the industry.

Typically, the steel industry progresses by taking two steps forward and one step backwards. Since 1921 there have been seven well-defined steel cycles — not counting the World War II period. Each of these cycles has lasted between three and six years.

Q. How will the rate of growth in steel demand during the coming five years compare with the rate of growth in the past ten years?

A. I think it will be slower. The large deferred demand for industrial plant and equipment and consumer durable goods at the end of World War II—which was reinforced by the heavy steel requirements of the Korean War—has now largely spent itself. In fact there is evidence that the growth in steel demand has slowed considerably since 1953.

From now on the demand for steel is likely to be less urgent and more closely geared to the normal growth in the economy.

Statistically speaking, the big jump in steel demand occurred in the five-year period 1948-53, when steel consumption rose 24 pct. By comparison, the increase in the four-year period 1953-57 was only seven pct (see chart, page 139).

In each case I am measuring the growth in steel consumption from the peak year of one cycle to the peak year of the next. Applying the same technique to the coming five-year period, I would expect steel consumption in the peak year

THOMAS DIMOND: In the January 3, 1957 issue of The IRON AGE, Thomas Dimond, economist, de Vegh & Co., New York, N. Y., called the turn on this year's recession in steel. In this interview he takes another look ahead at the steel market. Mr. Dimond is well-known as a steel market analyst. Before joining de Vegh & Co., he was manager, commercial research, for a steel firm.

of 1959-1962 to exceed 1957, but not by a very large margin.

Q. In terms of ingot tons, what do you estimate steel demand might be over the next few years?

A. Recognizing the fact that steel demand is highly volatile, I would estimate that steel consumption might be in the range of 120 to 125 million tons in a peak year in the 1959-62 period compared to 114 million tons in 1957. This might mean steel production of around 130 million tons if you take into account the buildup in steel inventories which might occur.

Q. The capital goods industries have been a pretty big steel user, haven't they? In view of at least a temporary over-expansion in some capital goods areas, what is the outlook here? Where do you see the bright spots?

A. The capital goods industries are the number one market for steel in the country. In 1957 they accounted for nearly 60 pct of steel consumption. (see chart page 138) I agree that we are not likely to see another spree in industrial plant expansion — such as occurred in 1956-1957—for several years. But there are other reasons for being optimistic about the demand for steel in the capital goods sector.

In the first place, the construction industry has proven itself not only the largest but one of the more stable markets for steel. The outlook is for increasing residential, highway, school, and military construction during the next few years. Second, I personally think that the oil and gas industry—although there is more question here—will continue to require more steel for drilling, (both in this country and in Canada and South America,) and for transporting oil and gas products.

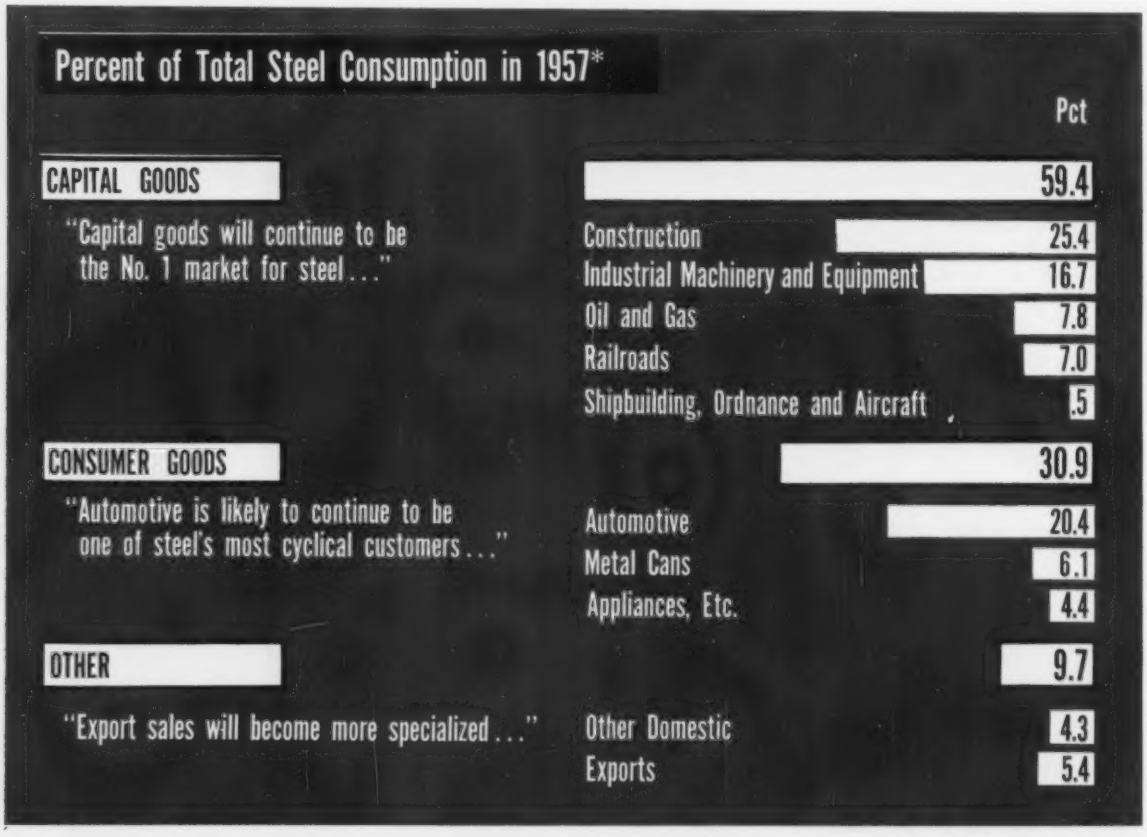
Finally, although industrial expansion may be slower in the years immediately ahead, business will spend more for modernization and automation as soon as corporate profits pick up.

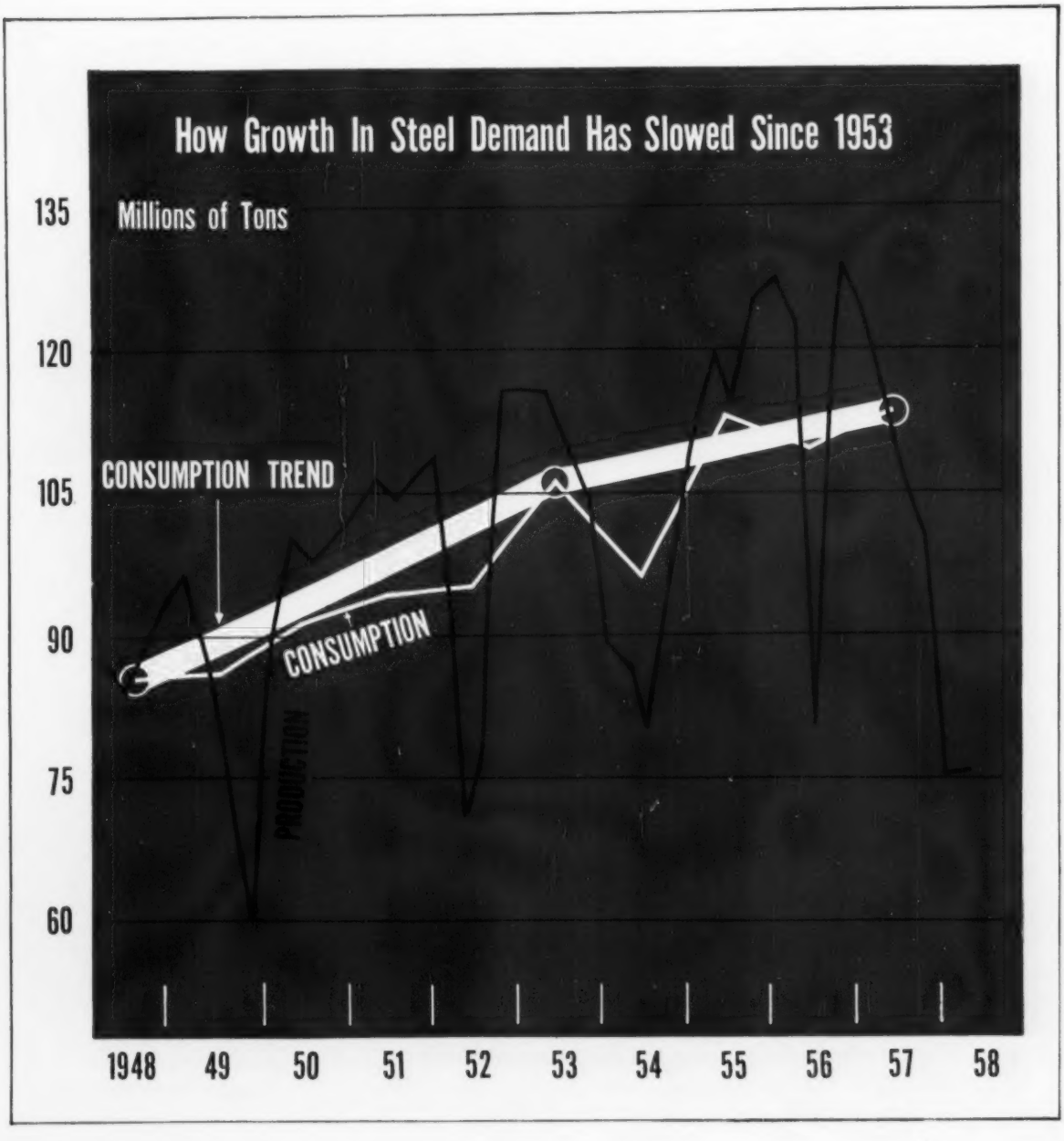
Q. Do you think there will be a shift in product mix?

A. Present trends in the steel product mix toward less rails and accessories and a growing proportion of structural shapes and plates are likely to continue. Expansion in the construction industry should give a lift not only to the heavy steel products, but also to wire mesh used in highway building and porcelain enamel and other coated sheets used for curtain wall construction.

I think there will be a trend toward upgrading the product mix due to the growing demand for higher quality steels. Special markets like aircraft and missiles and offshore oil well drilling demand

Steel's Biggest Customers





special quality steels. Furthermore, I would expect that there will be some upgrading in the quality requirements of the big tonnage markets, such as the automobile industry.

Q. Assuming, as we must here in this interview, that there won't be a major shooting war, do you think the industry will continue to increase capacity at the rate it did up to 1958?

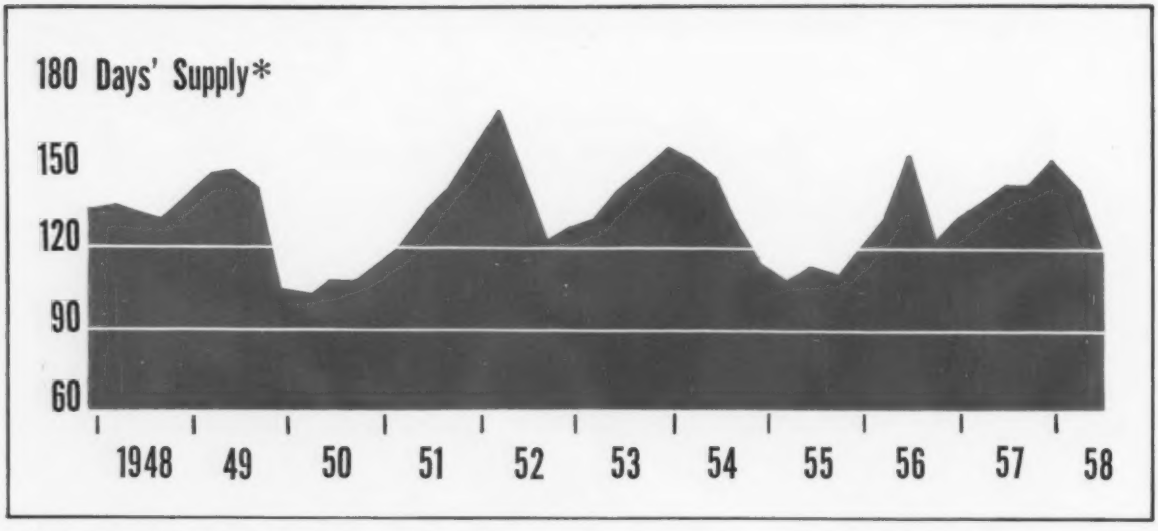
A. No. We have come to the end of the second round of steel expansion since World War II. The third is not likely to occur for another five years. Overall steel production is not likely to press capacity for several years, barring a national emergency or a long steel strike.

This does not mean that the steel industry will not spend a considerable amount of money for modernizing existing facilities, improving production techniques, shifting to automation wherever possible, and adding new production units. But overall capacity is more likely to inch up by two million tons or so a year rather than jump 24 million tons as it did during the past five years.

Q. You have previously said that the steel-consuming industries were gradually reducing their use of steel per unit of output. Do you think this is a continuing trend?

A. Yes. The projections of steel demand which I have mentioned

Steel Stocks: A Study in Peaks and Valleys



* Author's estimate of steel inventories at end of each quarter divided by estimated average daily consumption in following quarter. Inventories are measured in ingot equivalents and include all stocks from the time steel is poured into ingots until it becomes part of an end product.

assume a continued gradual reduction in the use of steel per unit of output in certain steel consuming industries. In part, this reduction is due to a change in the product mix of these industries. In part, it is due to some economy in use of steel through the substitution of other materials and metals.

In the appliance industry, for example, the growing proportion of electronics products in the product mix has resulted in a reduction in steel per unit of appliance output.

In the construction industry, it has been the increasing use of reinforced and pre-stressed concrete which has brought about some reduction in steel requirements per unit of output.

No doubt these trends will be offset in part by the development of new markets for steel.

Q. Do you think steel companies can do anything to reduce violent cyclical swings?

A. I believe that steel cycles are moderating due first to the improvement in contracyclical measures taken by the government and private business to combat business recessions and second to the growing diversification in steel markets.

The 1958 steel recession — although the worst since World War II— has been much less severe than the 1938 recession. Greater diversification in steel markets has helped support overall steel demand both in the 1954 and 1958 recessions. Demand for steel by the construction, metal can, and agricultural industries has held up rather well in both recent recessions.

On the other hand, the sharpness of the drop in steel production early this year has again reminded us that we are a long way from eliminating the steel cycle.

Q. What do you think of steel company earnings prospects over the next five years? Has the general reduction in breakeven points made steel less of a prince and pauper industry?

A. The 1958 recession has demonstrated that the breakeven points of many steel companies are lower than had been generally assumed. In the first quarter of this year 40 companies earned $136 million operating at 54 pct of capacity. This impressive performance can be attributed to the general improvement in operating efficiencies of the steel companies and the relative stability of steel prices in the face of a collapse in the market demand.

Of course, you have got to bear in mind that the performance was by no means uniform—with three of the leading steel companies showing declines in earnings of less than 50 pct (first quarter 1958 versus first quarter 1957) and several companies reporting losses.

In general, I would say that steel earnings during the next five years should benefit from increased volume, rising productivity due to improved operating techniques and automation, and the trend toward a higher quality product mix. Also, the reported earnings of many of the steel companies will be artificially inflated in the near term by the expiration of rapid amortization allowances.

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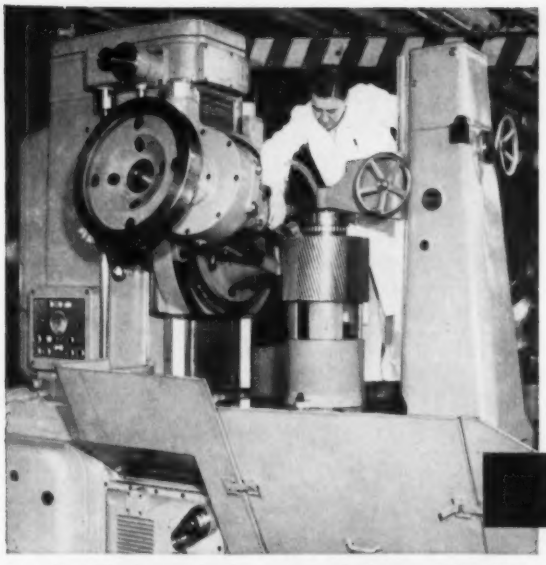

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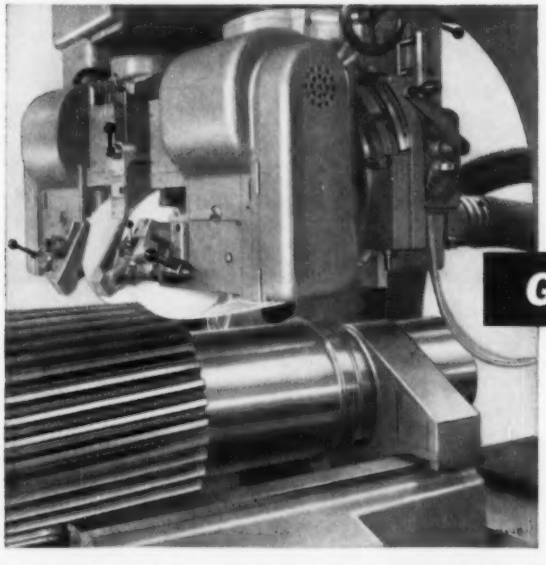

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What Do New Car Buyers Want?

The Answer May Be in Chrysler's 1959 Sales Showing

A test of buyer preference is coming next year, if the economy continues rising.

Chrysler, with its less-than-total changes, is banking on a good year.—By H. R. Neal.

■ Will the American auto buyer accept a less-than-totally-new automobile?

The eyes of the auto world will be watching Chrysler Corp.'s sales in 1959 to learn the answer to this vitally important question.

Barring a prolonged strike in the auto industry, the coming model year has all the signs of offering ideal conditions for testing a generally accepted Detroit theory: An automaker who comes out with an all-new car sooner and more often than his competitors will get a larger share of the market.

The Test—But the trend to major retooling every year in the industry is an expensive proposition which automakers would like to avoid. Here's where all the interest in Chrysler comes in.

First of all, Chrysler is the only major producer not coming out with an all-new car in 1959. Secondly, a rising economy will help loosen purse strings of prospective auto buyers. Finally, many people who bought new cars in the record year of 1955 are overdue to come into the market again. The auto industry hopes to sell a million more cars in 1959 than in 1958. Will Chrysler get its share?

Sheetmetal Changes—While Chrysler Corp. is making "substantial changes" in its Plymouth, Dodge, DeSoto, and Chrysler lines, the cars are still tied closely to the theme and body shell introduced in 1957.

FRENCH REPORT: Pictured with the Simca "Grand Large" two-door hardtop is Chrysler's B. J. Nichols, group vice president, automotive sales. Chrysler has contract for sole distributorship of Simca cars in U. S.

Despite less than "total changes," Chrysler president L. L. Colbert points out that "major styling advances, coupled with a host of new engineering developments, resulted in the introduction of an impressive total of 30,132 new body and chassis parts for 1959. And styling, he said, accounted for 81 pct of the new parts.

Plaza Is Out—Here's a make-by-make summary of new features which Chrysler Corp. is betting on to put it on a comeback trail.

Plymouth will drop Plaza as its lowest priced series, downgrade Savoy and Belvedere one notch, install the Fury as its top series and rename the souped-up job Sport Fury.

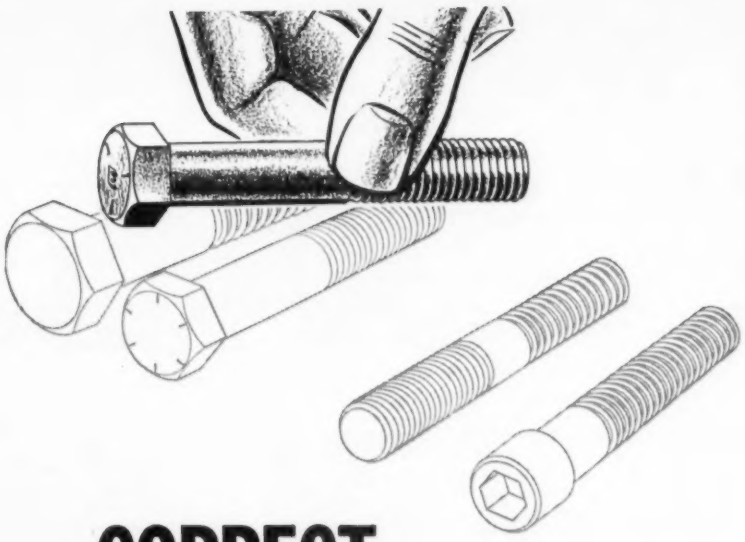
Most striking styling change is the rear treatment—modified to give the line the look of a "baby Imperial." Fins, extending farther forward, are chrome capped and canted outward.

Front End Treatment — Front fenders are "doubled barreled," like Valentine heart cutouts, and outline the dual headlights. Curved parking lights, set into the extreme ends of the grille, can be seen from front or side.

Chrysler's chief stylist, vice president Virgil M. Exner, calls Dodge's new front-end styling "a startlingly new effect achieved by sharply flaring the fender eyebrows upward and outward, as opposed to the squared-off line of the past."

Rear-end styling retains the fin-on-fin effect of recent models, but the lines have been softened somewhat by chrome moldings sweeping

ECONOMIC FACTS ON FASTENERS



CORRECT FASTENER SELECTION AVOIDS COST PENALTY

- **A fastener survey can reveal many opportunities for savings**
- **Cut costs without cutting strength or safety of connection**

It's a mistake to pay premium prices for fastener properties you neither need nor use. While costly alloys have their place, most times the three grades of steel used in standard bolts and nuts can do the job and save money.

Example: Specification calls for alloy bolts with strength of 145,000 psi. But in assembly, they're tightened to just 30,000 psi. This gives no more strength to the joint than a *far more economical* Bright Cap Screw tightened to same load. The change would save a substantial sum.

Reducing size also saves. Remember that a fastener's job is to hold an assembly together. *Holding power* is what you should buy, rather than size or number of pieces.

Example: Product requires fasteners with a safe load capacity of 20,000 pounds. Bright cap screws of ¾ inch size will do it; but so will ⅝ inch High Tensile Bolts—*at less cost.* Actually, to get the same holding power as in $1.00 worth of the high tensile fasteners, you would need $1.50 worth of bright cap screws.

All this just touches on a valuable story for any manufacturer using standard fasteners. Worth a call to hear what it holds for *you?* Contact Russell, Burdsall & Ward Bolt and Nut Company.

R B & W

114th year

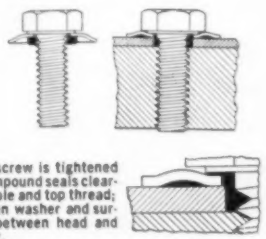
Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. **Additional sales offices at:** Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. **Sales agents at:** Milwaukee; New Orleans; Denver; Fargo. **Distributors from coast to coast.**

SPIN-SEAL* screws give leakproof fastening

for flat or curved sheet materials

Here is a new type of composite fastener that seals by means of a unique flow-in sealant and washer.†

Concave in shape, the heat treated springy washer confines and controls the flow of sealing compound. Tightening the screw forces sealant into various spaces around (1) threads, (2) head, and (3) clearance hole to give hermetic sealing.



When screw is tightened the compound seals clearance hole and top thread; between washer and surface; between head and washer.

The washer has ability to conform to curved surfaces and still seal securely against hydrostatic pressures and wind driven water.

ONLY THE SCREW TURNS

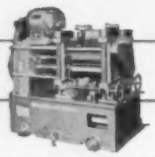
Washer does not turn with the screw. This prevents twisting or tearing the sealing "gasket", marring of polished surfaces, or gouging of painted finishes.

The flow-in gasketing compound is plastic rather than elastic. Stable and non aging, it won't split or ozone-check under pressure. It gives controlled flow into clearance spaces. Compounds are available to seal out water or oil.

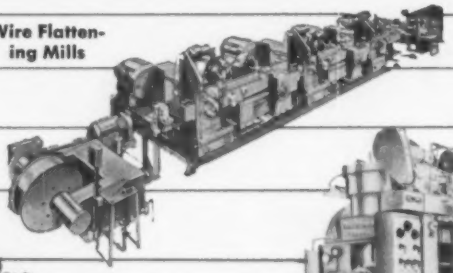
Send for Bulletin SS-1A. *T.M.

† U.S. & Can. Pats. Pend.

RB&W FASTENERS—STRONG POINT OF ANY ASSEMBLY

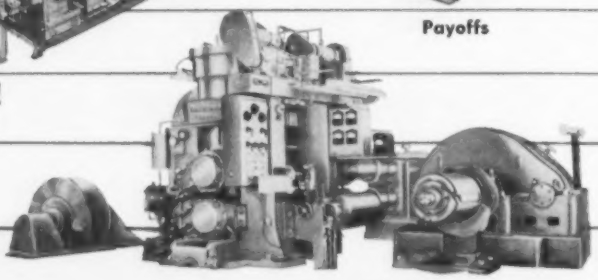


Coilers

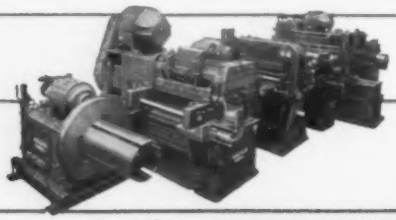


Wire Flattening Mills

Payoffs

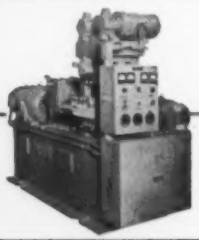


Two High Strip Rolling Mills

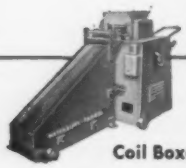


Gang Slitters

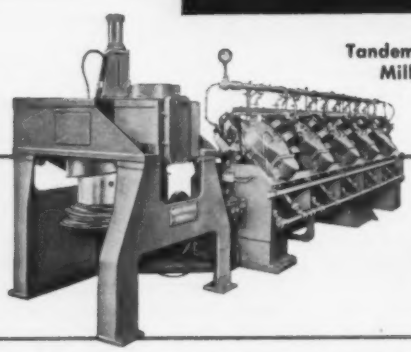
WATERBURY FARREL ROLLING MILL EQUIPMENT



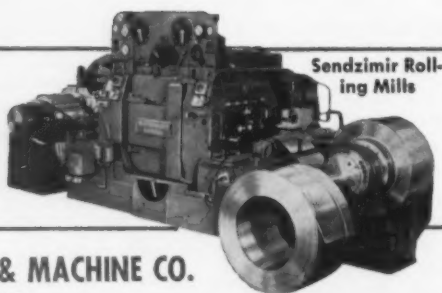
Four High Strip Rolling Mills



Coil Boxes



Tandem Rod Mills



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Bolt, Nut & Screw Machinery

Power Presses

Rolling Mill Machinery

Wire Mill Equipment

Sendzimir Mills & Special Machinery

WF-31R

Automotive Production

WEEK ENDING	CARS	TRUCKS
Sept. 6, 1958*	13,793	5,026
Aug. 30, 1958	11,572	8,910
Sept. 7, 1957	90,704	17,416
Aug. 31, 1957	118,553	20,915
TO DATE 1958	2,752,100	567,700
TO DATE 1957	4,481,800	777,800

*Preliminary Source: Ward's Reports

down and forward from the tip of the upper fin.

De Soto Lines—De Soto's front-end styling has been worked over to emphasize width and lowness. Dominating the front is a horizontally divided bumper. Between the upper and lower sections an air scoop extends virtually the width of the car. A narrow aluminum grille with horizontal lines stretches across the top of the bumper between the headlights.

Rear-end treatment slants forward, accented by a large double-bar rear bumper with aluminum recessed between the two bars of the bumper. Side color sweep treatments include gold and silver anodized aluminum inserts.

Roof Changes—Chrysler's roofs come in for interesting treatment. A "U"-shaped band of molding of stainless steel, with its base running across the back of the roof, divides the roof into two areas. A two-toning treatment corresponds to the raised rear section of the new roof design for four-door hardtops.

Horizontal grille bars, and vertical spacers are contoured to reflect light. Restyled rear fins sweep upward and form a hood over taillights inset into the end of the fins and slanted forward.

A new frame for Imperial provides more leg room and greater body and frame strength.

Engineering — President Colbert said the thousands of new parts also represent significant engineering developments in engines, suspensions, heating and air conditioning, seating, and unique uses for electronics.

Swivel front seats, as structurally strong and securely anchored as conventional seats, that turn outward to facilitate entrance and exit.

Higher horsepower engines will be available in all lines "to establish new levels of responsiveness." At the same time, fuel economy has been increased (for those who want it) through use of an economy rear axle and improved carburetion. The economy axle has a ratio of 2.93, same as overdrive, and will be available on TorqueFlite-equipped V8 models at no extra cost.

Deal With Simca—Slow to start offering economy-type imported cars, Chrysler has fast moving plans for them now. The corporation recently signed contracts with Simca, of France, to act as sole U. S. distributor for that car.

Chrysler reportedly bought up 15 pct of Simca's stock from Ford, bringing its total share to 25 pct.

Shooting for 15 pct of the U. S.'s expanding imported car market as its minimum goal for Simca, Chrysler will offer five models starting this month.

More Dealers Considered—B. J. Nichols, group vice president-automotive sales, said Chrysler is putting the full weight of its nationwide sales, service, and parts distribution system into the campaign. The number of Simca dealers may be increased from 600 to about 1000, Mr. Nichols said.

Chrysler Corp. dealers currently represent about 40 pct of the Simca dealer body in the U. S.

Popularity Growing—The Chrysler executive reported the French import has shown continually increasing popularity since 260 were sold in 1955, the first year they were imported here. In 1956 registrations climbed to over 2000, and last year totaled 5766 or 2.7 pct of the import market. In the first half of this year 7155 Simcas were registered for a sixth place ranking among the imports and 4.5 pct of the market.

Dulling the sharp optimism is threatened legal action by present Simca distributors if Simca and Chrysler attempt to cancel existing distributorships. Chrysler has said it will proceed with its plan.

THE BULL OF THE WOODS

THAT'S WHAT I CALL A REAL MAN--I HIT HIM FER A CHEW O' T'BACCER AN' HE SEZ, "GO BUY YOUR T'BACCER --YOU MAKE AS MUCH AS ME!" HE'S RIGHT, AN' I ADMIRE HIM FER IT!
WELL, I ADMIRE YOU FOR THINKIN' SO--WHAT A NOBLE CHARACTER!
THAT'S UTOPIA, YOU THREE--THAT'S TH' WAY PEOPLE SHOULD BE LIKE, I GUESS, BUT I CAN'T! I'D HAVE TOLD HIM TO TAKE HIS MOLDY TOBACCA AN' JUMP IN TH' LAKE!
ROOM 2
T.M. Reg. U.S. Pat. Off.
THE BROKEN CHAIN
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Why Grandmother!

Stories on grinding wheel problems—just like the kind you tell the youngsters—can have a happy ending. And we're writing new ones day after day for plants where high grinding wheel costs and low production have been wolfing up profits.

If *you* are ready to "cry wolf," let us send CINCINNATI (PD)° WHEELS to the rescue. For *now* CINCINNATI Grinding Wheels offer POSITIVE DUPLICATION—a remarkable achievement in precision manufacturing and quality control that can *save you money—and increase your production.*

Through the CINCINNATI (PD) Manufacturing Process you are assured Positive Duplication of the original wheel *every* time you reorder. "On grade" with a CINCINNATI (PD) WHEEL means all future (PD) WHEELS will act and grind exactly alike.

Yet CINCINNATI (PD) WHEELS *are priced no higher than ordinary wheels.*

So, if grinding problems have you ready to shout for help, just contact your CINCINNATI Grinding Wheel distributor. Or, contact us direct and we'll send one of our representatives —men who know grinding and grinding machines as well as grinding wheels. Write, wire or telephone—Sales Manager, Cincinnati Milling Products Division, Cincinnati 9, Ohio.

Remember—*only* CINCINNATI Grinding Wheels give you . . .

(PD) POSITIVE DUPLICATION

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Capital Sleuths Still Trail Steel

Kefauver Renews Probe of Steel Pricing

The Senator still smarts from adverse reaction to the last hearings on steel prices.

This time he will use a new approach, working through steel fabricators.—By G. H. Baker.

■ Congressional investigations will light up the sky for months to come. Steel will figure prominently in the coming fireworks, under present plans.

Although the new (86th) Congress won't open for business until Jan. 7, Senate and House members plan to get all the mileage possible out of the headline possibilities that remain this year. Plenty of political fireworks will be set off between now and the November elections. Dead cats will be thrown left and right by political hopefuls in each party in the scramble for votes.

Kefauver Again—A fresh round of public hearings on steel production and steel pricing is being readied by Sen. Kefauver, D., Tenn., who's been itching for a return bout with top-level steel management ever since he came off second best in his tussle with industry officials earlier this year.

Kefauver has been smarting under that defeat in public relations. In recent weeks, he has instructed the professional staff members of the Senate anti-monopoly subcommittee to dig deeper into steel industry production and sales practices. His goal: To try to prove that small fabricators and the public are caught in an unfair price squeeze engineered by a handful of major steel producers.

Fabricators To Be Called—Fabricators and other steel consumers are now being contacted by Mr. Kefauver's subcommittee. Steel producers, unless they are also fabricators, aren't being called into the congressional hearing rooms this time. The coming hearings—tentatively scheduled to open about Nov. 17—will provide what Sen. Kefauver calls "a day in court" for all classes of steel fabricators and steel consumers.

The committee is mailing out lengthy questionnaires to steel users, and professional subcommittee investigators are making personal calls on independent fabricators in what is plainly a new attempt to hang a charge of illegal pricing around the necks of steel producers.

Still Hopeful—Kefauver is still nettled over the failure of his Senate investigation of steel production and prices to "catch fire" last spring. He hopes that his new collection of pricing data will enable him and his investigating staff to light up the sky in a big way at the hearings in November.

Memories of his nationwide television popularity in 1950 (crime hearings) still are near and dear to "Keef's" heart.

How McElroy Stands on Missile Spending

Holding Our Own—Defense Secretary Neil McElroy serves notice that he doesn't plan to be pressured into pouring money into untried missile programs.

The U. S,. he says confidently, is ahead of Russia in over-all military might. It is his judgment and the judgment of the Joint Chiefs of Staff that the nation can prevent attack by keeping on the alert with enough power to devastate an aggressor. This country has that power today, according to Mr. McElroy.

Use Discretion—Defense spending, whether for missiles or other items, will be directed with discernment and discretion, he emphasizes. Spending for any and all governmental programs, in his judgment, must be so guided. If public funds are not used wisely the country can be defeated without actual warfare, he warns.

Mr. McElroy observes that the nation is not relying entirely on the Strategic Air Command as a shield against aggression. The tactical air units overseas and the Navy's carrier task forces are powerful enough, he estimates, to make any enemy hestitate to strike.

Reds Lead in ICBM—The Russians, he concedes, probably are ahead of the U. S. in development of an intercontinental missile. But he believes this weapon is still in the testing and proving stage in Russia, as it is in this country.

Russia, like any other country building missiles, faces problems of a smooth transition between the development and production stages, he feels. Mr. McElroy reasons that it would be foolhardy for the U. S. to attempt a shortcut to get ahead of Russia, if it meant sacrificing adequate research and development work in order to mass-produce missiles.

An analysis of your final job costs will prove to you that by ordering your sheared sheet blanks from A. M. Castle & Co.–your production and handling costs will be appreciably reduced.

Not only will you cut your costs and have fewer headaches but–the steel you'll receive will be selected for your specific job...miked to gauge...graded for quality...tested for hardness...sheared to specified tolerances...and...inspected for accuracy. Thus, you can be assured of quality blanks–every time.

In addition, when you order sheared sheet blanks from Castle you will–reduce scrap, save on storage space, trim your inventory, and lower your capital investment.

So why not call Castle now and find out how easily you, too, can get quality sheared sheet blanks–ready to use–tailor made for your particular product.

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Why West Coast Industry Grows

Manufacturers Keep Expanding Product Lines

Farwest firms are making or assembling an ever widening variety of products.

As a result they're always good sales prospects for metalworking suppliers.

Here's latest look at area's new industrial projects and products.—By R. R. Kay.

■ There's more to the story of southern California industrial growth than the impressive number of new and expanding metalworking firms. Steadily on the rise is a wider variety of products made or assembled in the area.

This broadening of metalworking's base spells out a stronger and more diversified economy for the region. Take a look at some of the latest projects. These are companies in the market for products and services:

Aircraft Equipment—Mil-Air Engineering, La Canada — aircraft ground handling equipment. Faith Plating Co., Los Angeles—metal finishing. Litecraft Pacific Manufacturing Corp., Glendale—electric light fixtures. Aerolab Development Co., Pasadena—research missiles.

F. H. Larrabee Iron Works, Norwalk — ornamental iron, fences, gates. Pioneer Manufacturing Co., Los Angeles—water heaters, garbage disposers. Christie Electric Corp., Los Angeles—battery charging and testing equipment. Horkey-Moore Associates, Torrance—aircraft testing.

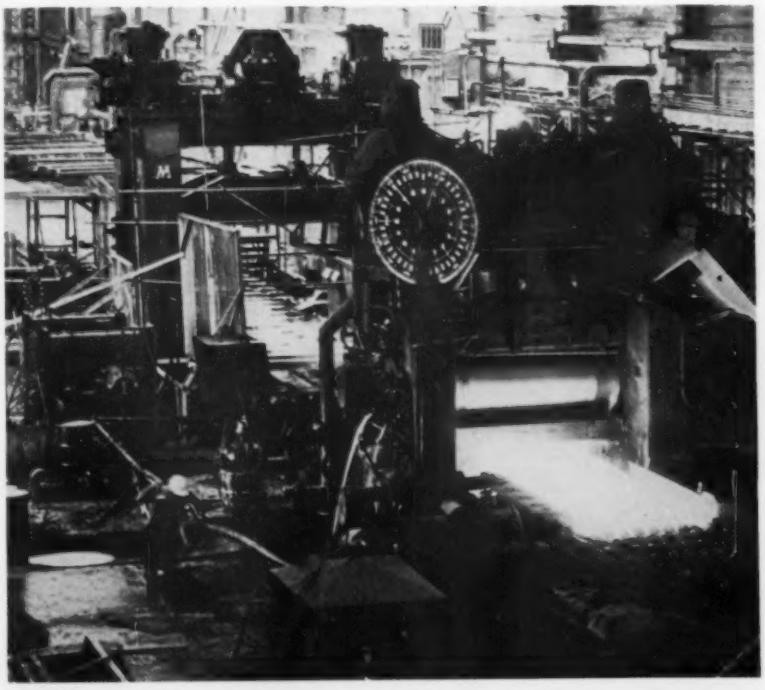
Controls and Fasteners—General Controls Co., Aircraft-Electronics Div., Glendale—hydraulic, pneumatic, and fuel controls. Mercury Air Parts, Culver City—aircraft hardware and industrial fasteners. Clear Beam Antenna Corp., Canoga Park—television antennas, masts, accessories.

Pesco Products Div. of Borg-Warner Corp., Burbank—aircraft pumps, motors, alternators. Cromer Manufacturing & Engineering, Inc., Los Angeles—welded steel fabrication. R. A. Roderick Sheet Metal Co., Gardena—aircraft sheet metal work. Aerol Co., Inc., Los Angeles —industrial wheels and casters.

Aeronutronic Systems, Inc., subsidiary of Ford Motor Co., Newport Beach—computers for military and commercial use. Acroscope Engineering Co., Los Angeles—lapping and honing. R. Johnson Machine Shop, Lennox—tool, die, and machine work. Marwais Steel Co., Los Angeles—steel warehouse.

Motors, Dies, and Washers—Lawrence A. Notthoff Engineering, Inc., Huntington Park — aircraft parts. Western Washer & Stamping Co., Los Angeles—aircraft washers and casters.

Present and Future Get Equal Attention



WORKING SIDE BY SIDE: While Kaiser Steel millmen roll slabs at 110-in. plate mill at Fontana (right), construction crews work on new, 148-in. rolling stand. The new mill, part of company's $214,000 expansion program will supply larger tonnages of wider plate for Western market.

Treat 'em rough,
These Wood Valves can take it.

Presses take a beating? No need to worry about the effect on your hydraulic system if Wood Valves are at work. They're built to handle the toughest jobs. For example, this 3″x1½″ special main control valve is installed on a 1500 ton forging press. Operating conditions demand extremes in acceleration and deceleration, yet the valve assures shock-free, efficient service due to its inverse flow design. Control of the ram is precise, accurate . . . with shockless decompression. You can also see a fully balanced throttle valve and a 3″x7″ shock alleviator, further examples of Wood's complete line of quality high-pressure valves. Write today for complete information.

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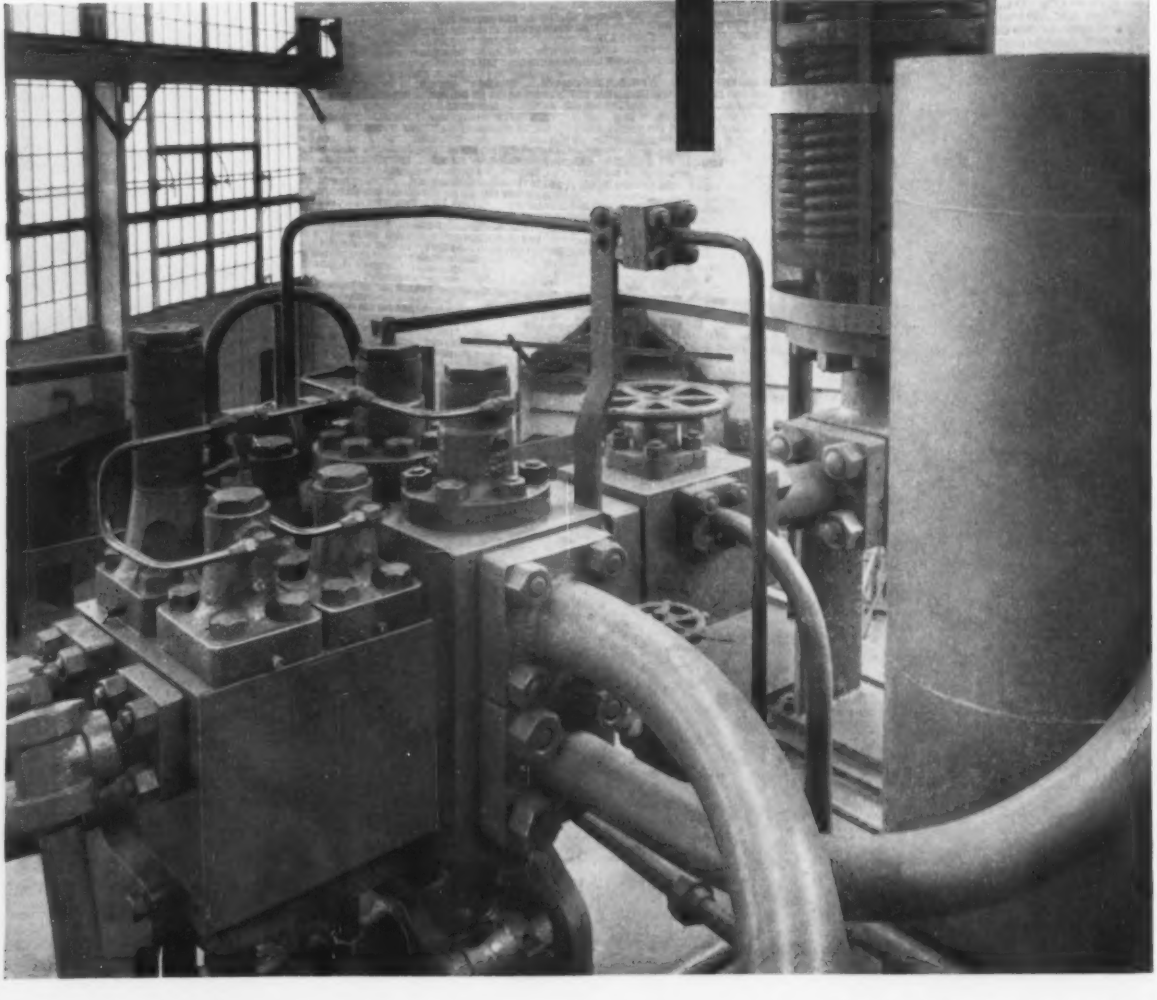


Builders Dust Off Leasing Plans

Recession in Tool Buying Revives Leasing

Builders who wouldn't use the word a year or so ago are now actively pushing leasing plans.

It's a good way for a company that's short on capital today to get equipment that may be needed for a job.—By E. J. Egan, Jr.

▪ Do you lack the necessary cash to buy new machine tools? Or do you have the money but hesitate to invest it in new equipment right now?

Whatever your reason, machine tool builders say it needn't stop you from taking some positive action to improve your machining operations and cut production costs.

Old Plans Revived—Some builders are beginning to dust off tool-leasing plans that were widely promoted a few years back. Such plans haven't been pushed too hard in the past couple of years, but they could be a good bet for some companies in these recession-tinged times.

The idea is that if you can't afford to buy a new machine outright you can at least rent one. Maybe you already have good use for a new unit, or maybe you can bag a profitable contract if you get one. If so, it should earn you more money than you have to pay out in rent.

Buying Aid—What's more, most leasing plans let you apply your rental payments toward the purchase price. This way, you'll eventually own the machine yourself. Most likely, it will still give you many years of good service.

Other builders are anxious to have you send worn machines to their plants for rebuilding or reconditioning. Most of them have plenty of time and talent to do a good job. Apparently, a fair number of users are taking advantage of these offers.

Reconditioning Service—The Heald Machine Co., Worcester, Mass., recognizes that many plants these days face the problem of "make it do—at least for now." Where machine age and productive capacity doesn't warrant a complete rebuilding job, Heald suggests a factory reconditioning. A standard procedure has been worked out to restore machines to top condition at the lowest possible cost.

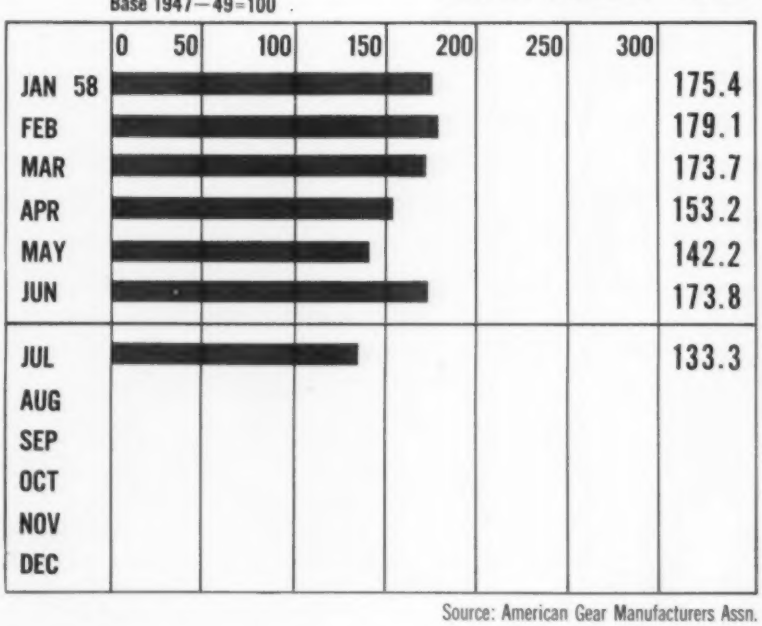
Machines are completely dismantled, and all parts are cleaned and adjusted. Table ways are scraped and machines are reassembled. New parts are used only where necessary. Final test is to insure machine performance on a par with the way it functioned when new.

Faster Depreciation

Among features, the new tax bill just signed by the President permits you to depreciate 20 pct of the cost of income-producing equipment in the first year you own it. You take your usual first-year depreciation allowance on the remaining 80 pct.

There are some limitations, however. The 20 pct deduction for the first year is limited to $10,000 ($20,000 if you file a joint tax return). Nor does the provision apply to any equipment bought before December 31, 1957. Moreover, the equipment you buy must have a useful life of at least six years.

GEAR INDEX 1958



Source: American Gear Manufacturers Assn.

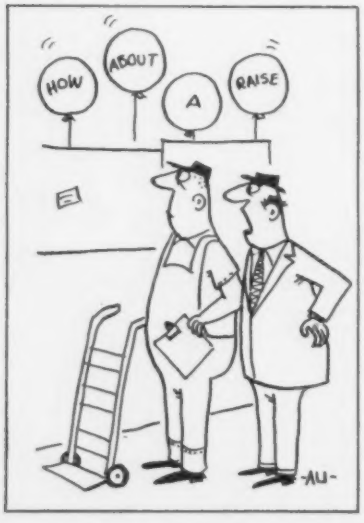
INDUSTRIAL BRIEFS

South Bound—Strom Steel Ball Co. has moved its plant and general offices from Cicero,' Ill. to Erwin, Tenn. Strom produces materials for the aircraft, automotive, petroleum, machinery bearing and other manufacturing industries.

New Fuze Needed—A $1.7 million contract for development and production of the warhead proximity fuze for the new BOMARC IM-99B guided missile has been awarded to the York Div., Bendix Aviation Corp. The missile is an advanced version of the Air Defense Command pilotless interceptor.

Making Room—The Blaw-Knox Co. will convert its Buflovak Equipment Div. foundry into additional modern fabricating and manufacturing space. It has licensed the Black-Clawson Co. to manufacture Buflovak's line of cast-iron vessels at its facilities in Hamilton, O.

Time Study Quickie — Lehigh University's department of industrial engineering, Bethlehem, Pa., will conduct a one-day short course in time standards in metalworking, Sept. 30 in the University Center in Packer Hall on the campus.



"See if you can find out who's sending up those trial balloons."

Quite a Lungfull — U. S. Steel Corp.'s Gary Works has a new oxygen-producing plant. Built, maintained, and operated by Linde Co., Div. of Union Carbide Corp., the unit will produce 94 million cu ft a month of high purity oxygen for Gary Works and Gary Sheet and Tin Mill demands.

Back in the Business—Supreme Steel Equipment Co., Brooklyn, N. Y., purchased the machinery, patent rights, trademarks, and good will of Universal Steel Equipment Corp. of Long Island City, N. Y. The acquisition marks the re-entry of Supreme into the industrial steel equipment field.

Research Never Ends—A new addition will be built at U. S. Steel's Research Center for a modern electromechanical development laboratory. The lab will provide facilities for the study of increased use of instrumentation, process and materials handling mechanisms, and automatic control in steel production.

New Aluminum Alloy — A new alloy of high tensile and yield strengths with high elongations and excellent castability was announced by Reynolds Metals Co. Designated alloy 357, it handles with all the ease of alloy 356 but develops considerably higher mechanical properties, the company claims.

Hair-Size Tube — Microtubing .003 in. in diameter is being offered to industry by Monsanto Chemical Co., St. Louis. The hair-size tubing, made of quartz, was originally developed for the Atomic Energy Commission. It is flexible, has higher tensile strength than steel, and resists high temperatures, Monsanto claims.

Metal's Better—Vertol Aircraft Corp., Morton, Pa. received $1,130,795 order from the U. S. Air Force for new type, all-metal rotor blades and component kits for use on Vertol's H-21B helicopters now in Air Force service. Until now, all military H-21 'copters have been equipped with wooden blades.

A Pipefull—Air Reduction Sales Co. will construct a new plant for Armco Steel Corp. on Air Reduction property at Butler, Pa., to supply Armco's Butler Works with pipeline oxygen. Up to 84 million cu ft of oxygen a month will be piped from the new unit to Butler Works for use in making steel and for general mill purposes.

Road Marker—Chain Belt Co., Milwaukee, will build a new plant at Madison, Ind. The facility will manufacture Chain Belt's Rex line of concrete road paving and finishing machinery. It will help consolidate the company's present operations at plants in Niles and Newton Falls, O., and Rock Island, Ill.

Bridge Engineers Note—A steel highway bridge design competition offering 15 awards totaling $44,000 to engineers and college engineering students is being sponsored by the American Bridge Div., U. S. Steel Corp. and the American Institute of Steel Construction. Deadline for entering the competition is midnight, May 31, 1959.

Scrapmen Pick a Scholar—The first scholarship established by the Central Pennsylvania Chapter, Institute of Scrap Iron & Steel Inc., was awarded to Walter B. Wagner of Drums, Pa. He plans to enroll at Lehigh University, Bethlehem, Pa.

Busy Bridgebuilder — Chicago Bridge & Iron Co., Chicago, plans to expand its plants at Greenville, Pa., and Salt Lake City. A 100 x 400-ft building for structural fabrication and two open crane runways will be built at Greenville. Another building of the same size will go up at Salt Lake for fabrication of detail parts, fittings, accessories, and structural steel.

Management Spokesman—E. F. Scoutten, vice president, personnel, Maytag Co., accepted an invitation by Labor Secretary Mitchell to serve as an employer member of the Federal Advisory Council on Employment Security. His term runs until June 30, 1960.

MORGAN CONSTRUCTION COMPANY WORCESTER, MASS.
ROLLING MILLS • MORGOIL BEARINGS • WIRE MILLS • REGENERATIVE FURNACE CONTROL • EJECTORS • GAS PRODUCERS
S. S. Rickley, Representative, 300 Cedar Blvd., Pittsburgh, Pennsylvania

Lithium alloys for thrifty metal makers

The wonderful thing about these *property-boosting* lithium alloys is that they call for so little lithium. In many cases, the addition of a few ounces is all that's needed to tip the scales toward . . . more desirable physical properties, better grain structure, improved cold working characteristics, and many other features. Needless to say, the addition of lithium can't improve *every* alloy. But where it does, its cost is infinitesimal compared to the advantages it gives. Just look over the few examples given here. You'll find that lithium is an alloying metal well worth investigating.

To find out more about lithium metal (99.9% pure) and what it might do for you, write for Bulletin 101. Address letterhead request to Technical Literature Department, Foote Mineral Company. 438 Eighteen West Chelten Building, Philadelphia 44, Pennsylvania.

Magnesium-Manganese-Lithium

80-98% MAGNESIUM
1-10% MANGANESE
1-10% LITHIUM

As little as 1-10% lithium in the above alloy gives greatly improved cold working properties. As cast, this alloy can be cold worked to 60% reduction; after annealing, it can be cold worked to 95% reduction.

Zinc-Lithium

96.5-99.8+ % ZINC
.1-2% MANGANESE
.05-1% NICKEL
.005-.5% LITHIUM

The percentage of lithium used to refine the grain structure of this zinc alloy works out to as little as 1 pound of lithium to every 1000 tons of zinc. This amounts to about 1¢ per ton!

Aluminum-Lithium

84.15% ALUMINUM	.75% MANGANESE	.1% LITHIUM
12% ZINC	.5% IRON	
2% COPPER	.5% SILICON	

The physical properties of this aluminum alloy are reported to be superior to the better known, high-strength aluminum alloys. The presence of the lithium improves its physical properties and correspondingly decreases its density.

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LITHIUM METAL, CHEMICALS, MINERALS • ELECTROLYTIC MANGANESE METAL • NITRELMANG • HYDROGEN-REMOVED ELECTROMANGANESE • RIMEX MANGANESE SULPHIDE • WELDING GRADE FERRO ALLOYS • COMMERCIAL MINERALS AND ORES • ZIRCONIUM, TITANIUM, HAFNIUM (IODIDE PROCESS)

J. D. MacKenzie, elected chairman of the board, American Smelting & Refining Co.

J. B. Wharton, Jr., elected president and chief executive officer, National Can Corp.; **R. S. Solinsky,** named chairman of the board.

J. H. Eikenberg, promoted to general manufacturing manager, Revere Copper & Brass, Inc.

C. W. Bean, appointed division sales manager, Southwestern Div., Armco Drainage & Metal Products, Inc., Middletown, O.

T. C. Jones, appointed general superintendent, Salem, Va., Plant, The Yale & Towne Mfg. Co.

J. F. McCrudden, Jr., appointed district sales manager, New York office, Alan Wood Steel Co., Conshohocken, Pa.

R. B. Heppenstall, Jr., elected vice president, Heppenstall Co., Pittsburgh.

L. A. Reinhardt, appointed vice president and controller, Industrial Brownhoist Corp., Bay City, Mich.

W. F. Greenwood, appointed manager, marketing, General Electric Co.'s Receiving Tube Dept., Owensboro, Ky.

A. M. Dexter, named director, metrology, Pratt & Whitney Co., Inc., W. Hartford, Conn.; **C. B. Blanchard,** appointed superintendent, Gage Div.

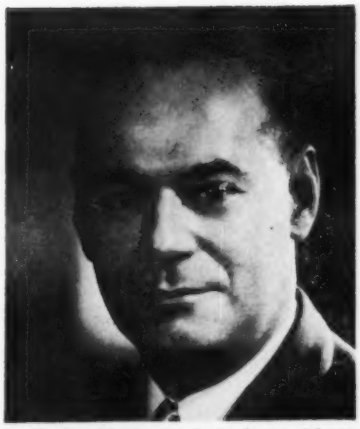
W. P. Janks, appointed Midwest district manager and **R. M. Underwood,** Northeast district manager, Cleveland Tramrail Div., The Cleveland Crane & Engineering Co., Wickliffe, O.

Marvin Claeys, named quality control superintendent, United Air Lines, Chicago.

R. B. Algie, appointed Chicago district sales manager, Jones & Laughlin Steel Corp.

J. A. McCain, appointed Eastern regional manager, **R. C. Wilts,** as New York branch manager and **H. B. Barron** as eastern regional manager, power plant equipment, American - Standard, American Blower Div., Detroit.

A. H. Dall, appointed chief engineer, The Cincinnati Milling Machine Co.



C. L. Hecker, elected president, The Oliver Corp., Chicago.

C. A. Baisch, Jr., appointed product manager, merchant bars and structural shapes, West Virginia Works, Connors Steel Div., H. K. Porter Co., Inc.

D. W. Banner, appointed asst. general patent counsel, Borg-Warner Corp., Chicago.

R. W. Titgemeyer, named branch manager, Los Angeles territory, The Carpenter Steel Co., Reading, Pa.

D. M. Pratt, appointed sales manager, resins and adhesives and **W. A. Suiter,** named sales manager, Cycolac plastic, Marbon Chemical

J. B. O'Donnell, appointed manager, highway product sales, Aluminum Co. of America, Pittsburgh.

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Div., Borg-Warner Corp., Washington, W. Va.

R. C. Doggett, appointed implement sales manager, Farm Equipment Div., Allis-Chalmers Mfg. Co., Milwaukee.

N. E. Keeler, elected vice president and treasurer, Acme Steel Co., Chicago.

J. D. Leslie, appointed asst. district sales manager, New York district office, Haynes Stellite Co., Div. of Union Carbide Corp.

J. R. McCord, named director, marketing, Ferro Corp., Cleveland.

Gordon Paul, appointed works manager, Hansell-Elcock Co., Chicago.

W. F. Oswalt, named general manager, Direct Current Motor and Generator Dept. at Erie, Pa., General Electric Co.

H. E. Nagle, appointed manager, Stamford, Conn., Plant, The Yale & Towne Mfg. Co.

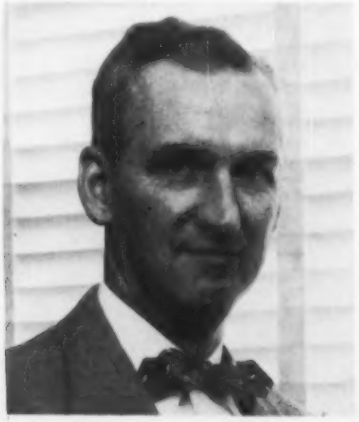
C. W. Sherman, appointed technical director, Jones & Laughlin Steel Corp.'s Stainless and Strip Div.

A. G. Handschumacher, appointed corporate director, research and development, Rheem Mfg. Co., New York.

N. H. Holland, appointed sales manager, Athol Div., Union Twist Drill Co., Athol, Mass.

Eugene Fioramonti, appointed Western regional sales manager, The Narda Ultrasonics Corp., Westbury, New York.

H. H. Lyon, promoted to manager, Madison Div., Madison, Ill., The Dow Chemical Co.



H. R. Hesse, elected secretary and general counsel, Wheeling Steel Corp.

E. A. Kracker, appointed plant industrial engineer, Republic Steel Corp.'s Union Drawn Steel Div. plant in Massillon, O.; **M. H. Creter,**

Stainless Steel Service
the Ingersoll way

Service is a word that gets kicked around a lot—often tossed off lightly and loosely. But here at Ingersoll Steel, *service* is a word we live by.

It means, for example, tailoring our production schedules to *your* requirements. It means producing to your exact analysis, size and thickness specifications. It means quality control to assure uniformly high quality from one order to the next, so you can depend on the fabricating characteristics you expect. It means deliveries timed to your production needs. It means providing technical information whenever required.

So next time you need stainless sheets or plates —solid, heat-resisting, or clad—call Ingersoll Steel and get a new slant on *service*.

Our telephone number is New Castle (Indiana) 132

B-W

Ingersoll STEEL DIVISION

Borg-Warner Corporation

New Castle, Indiana

Columbia-Southern Trichlor provide economical answers

An exclusively developed neutral stabilizer in Columbia-Southern Trichlorethylene has aided metal fabricators in eliminating a number of troublesome degreasing problems.

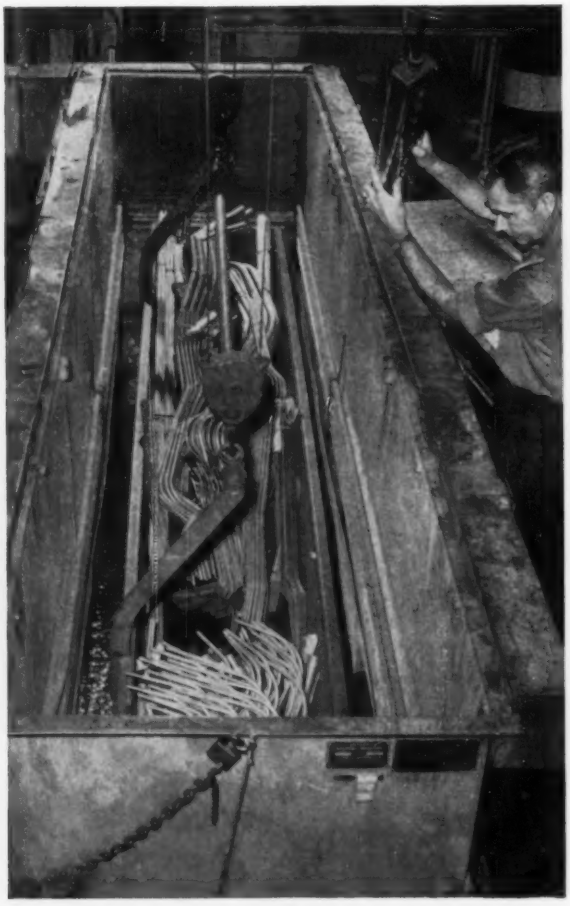
In the past, many plants experienced extreme difficulties, resulting in damage to work or the degreaser itself. Frequently these difficulties could be traced to use of solvents "stabilized" with the inadequate alkaline amines.

Columbia-Southern Trichlor, on the other hand, is formulated to provide a stabilizer that assures built-in chemical protection against breakdown under light, heat, oxygen, acids, moisture and repeated distillations.

Aluminum sheet and formed parts are particularly sensitive to improperly stabilized solvent. Neutrally stabilized Columbia-Southern Trichlor is now specified by many large volume aluminum fabricators.

and expert Technical Service to vapor degreasing problems

Vapor degreasing offers an extremely flexible and low-cost cleaning method for parts ranging in composition from aluminum to steel, zinc, brass, magnesium, titanium, special alloys; running in weight from 268 ton generator stators to 1/240 oz. watch gears.



Columbia-Southern Trichlor is completely suitable for removing grinding and buffing compounds, graphite, grease, coolants, quenching and lubricating oils, other contaminants from the most intricately drawn or shaped parts. Parts come out thoroughly clean and dry, ready for next operation.

As a further bonus, Columbia-Southern Technical Service representatives work with customers in trouble-shooting and in establishing more effective and economical procedures for degreasing. These men have earned a reputation for solving the problem. Their services are at your disposal.

Have Columbia-Southern's experts check the efficiency of *your* vapor degreasing operation or help *you* with your solvent specifications. Just contact our Pittsburgh address, or any of the fourteen conveniently located District Sales Offices listed below.

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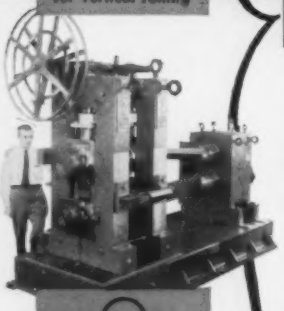
*Convertible Rolling Mill**

Pinion stand and housing arranged for vertical rolling

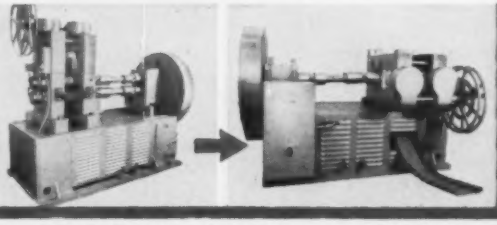
As a vertical mill ideal for rolling Powdered Metals—yet converts to a standard horizontal mill for rolling strip.



Pinion stand and housing quickly converted for conventional, horizontal rolling.

Here is outstanding flexibility for the metallurgical laboratory or production. This Fenn Dual-Purpose Rolling Mill can be used for both powder metallurgy and strip rolling. Combines all the precision features of other Fenn mills, yet, this Fenn Convertible Rolling Mill is literally two mills in one . . . ideal for application wherever space and capital are limited. By simple movement of pinion stand and roll housing, it quickly converts for either vertical or horizontal rolling. Mill featured is a Model V4-126 Two-High/Four-High Combination Mill with 12" rolls, 40 HP variable speed AC drive. Write for complete information and Fenn catalog FRM-58.

** patent applied for*



The inherent design of Fenn Rolling Mills permits all sizes to be supplied with the Convertible feature. Illustrated is a Series 6 Convertible Mill.

FENN MANUFACTURING COMPANY • 304 FENN ROAD • NEWINGTON, CONN.

named asst. superintendent, industrial relations, Union Drawn Div.

G. M. Long, appointed sales manager, Wheeling Corrugating Co.

A. G. Profet, named research and development engineer, Jack Div., Duff-Norton Co. of Pittsburgh.

Jack Preston, named chief research metallurgist, special metals, Watervliet, N. Y., Research Laboratory, Allegheny Ludlum Steel Corp., Pittsburgh.

G. M. Muschap, becomes group vice president, engineering, Minneapolis - Honeywell Regulator Co.; **O. B. Wilson,** group vice president, marketing; **J. M. Wilson,** director, engineering; **R. L. Mallory,** sales manager, industrial products group; **J. A. Robinson,** sales manager, Brown Instruments Div.; **H. J. MacDonald,** general manager, Valve Div.; **H. E. Benson,** sales manager, Rubicon Div.

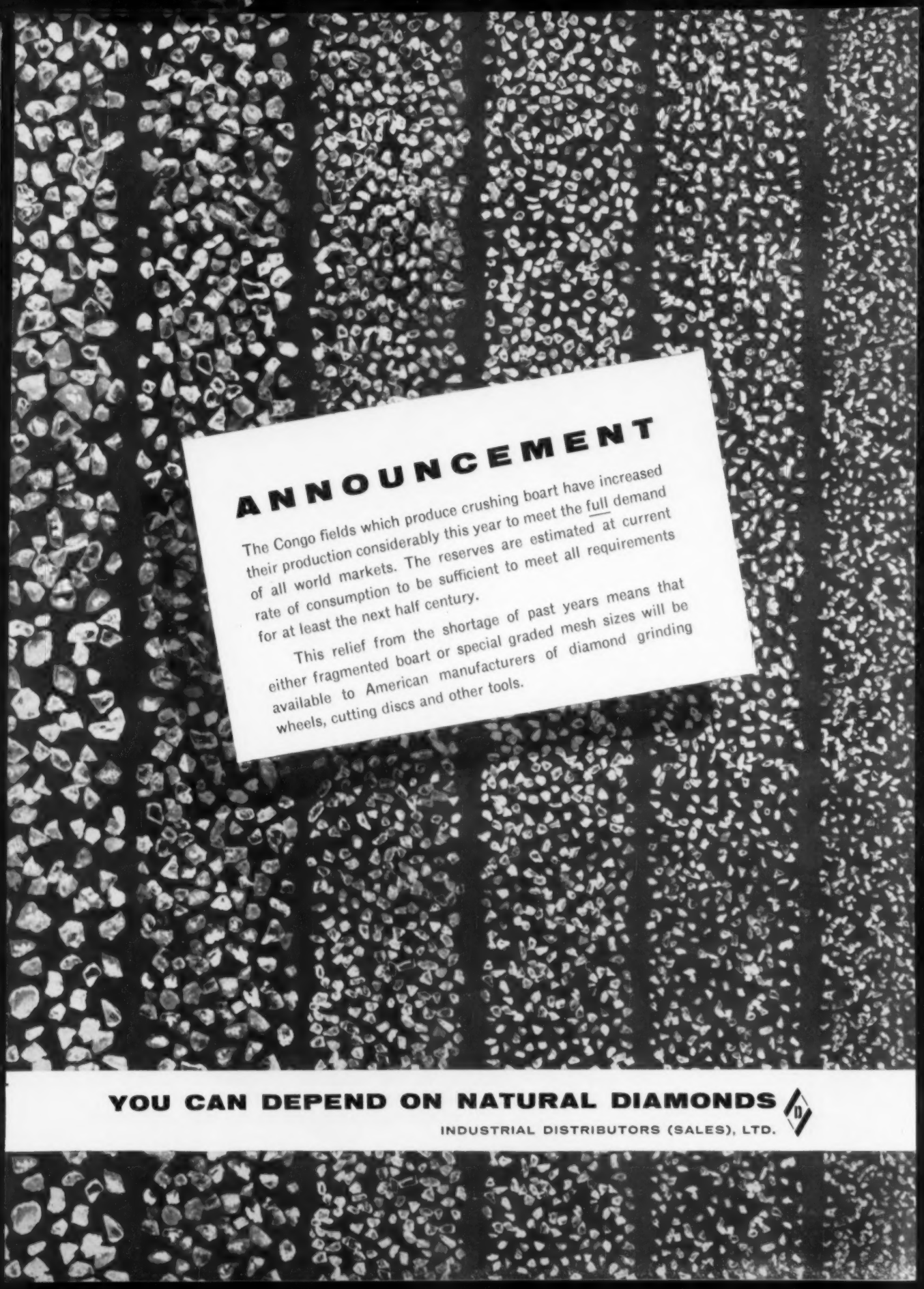
J. H. Hartleb, appointed field engineer, Los Angeles district office, Norton Co., Worcester, Mass.

E. D. Carr, appointed sales engineer, Metal Finishing Div., Frederic B. Stevens, Inc. of Detroit.

OBITUARIES

E. A. Cowles, 88, founder and past president, Cowles Tool Co., Cleveland.

J. A. Brooker, 75, president, The Brooker Bros. Forging Co., Norwalk, O.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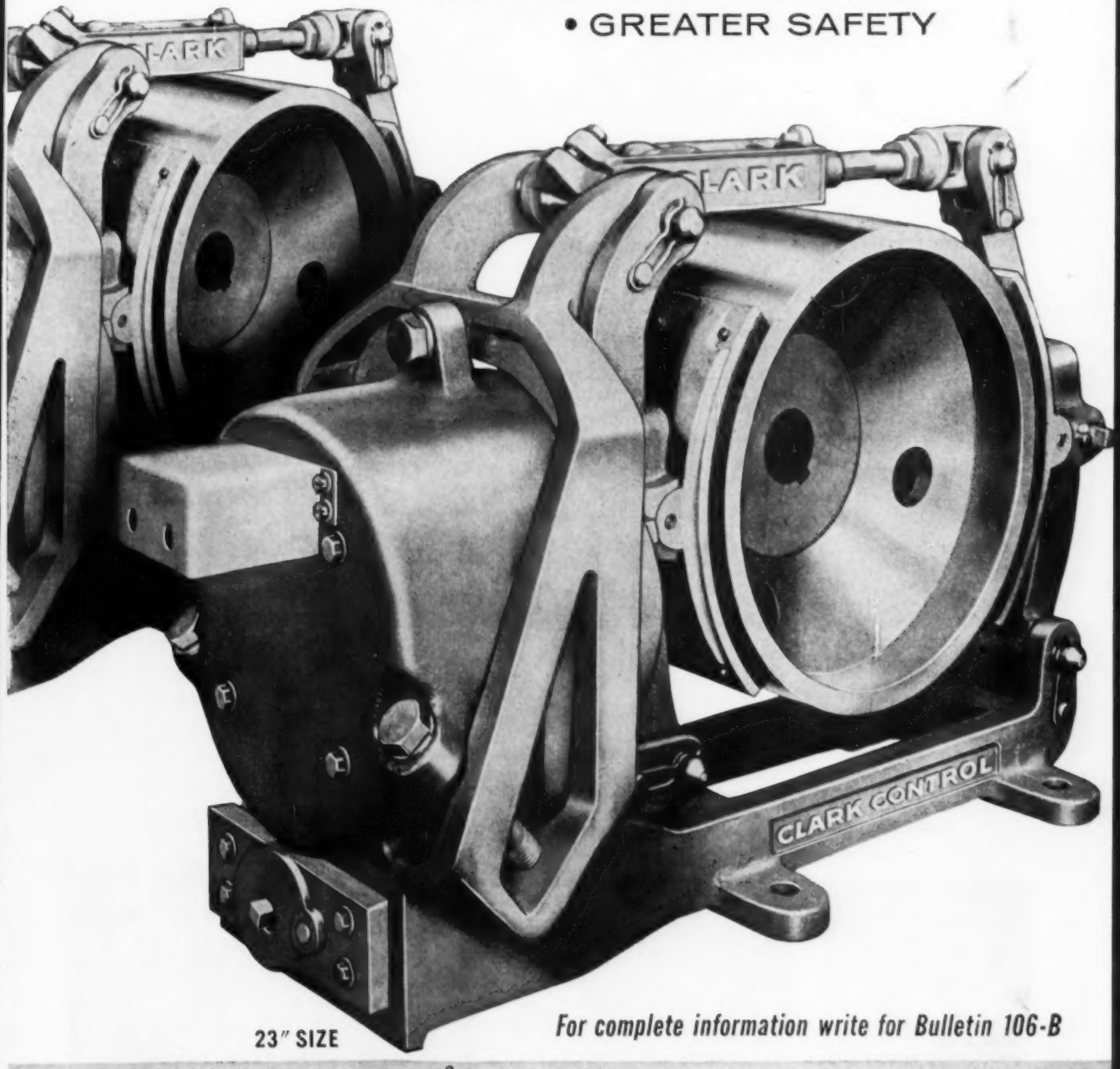

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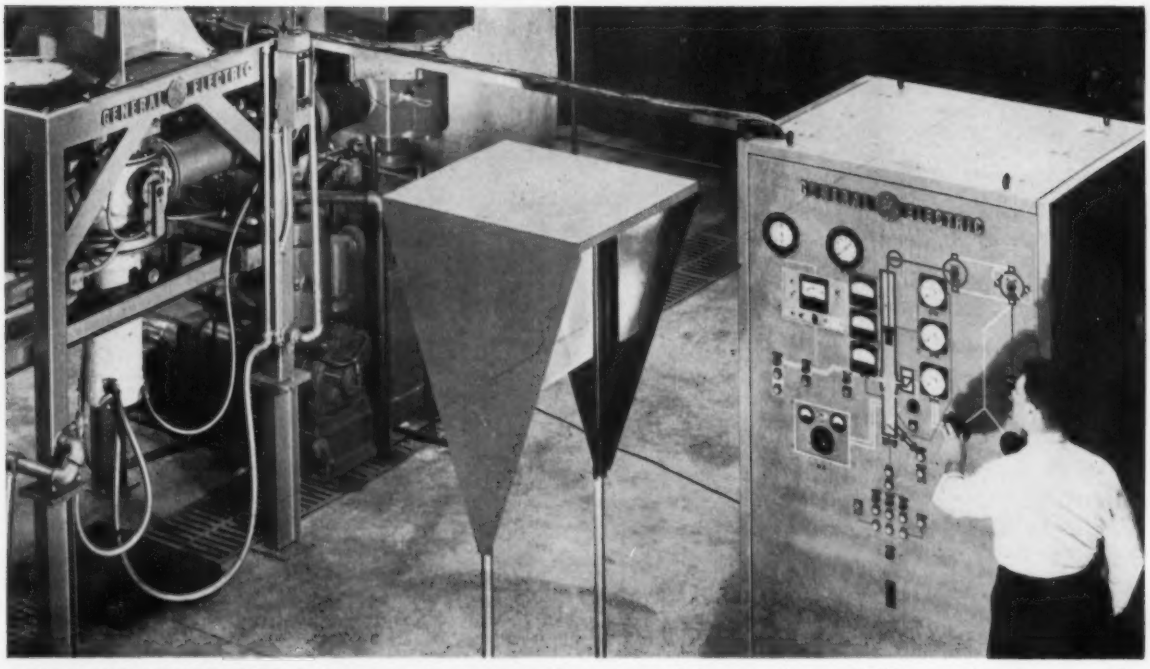


EXPLORES VARIABLES: Laboratory-size vacuum furnace used in tests has a 3000-amp dc power supply.

Probe Key Melting Variables

Find New Facts on Consumable Arc Remelting Under Vacuum

How consistent are the results obtained in consumable arc remelting? What effect do melting variables have on ingot quality?

To these provocative questions, an exploratory test program provides some of the more important answers.

By P. M. Unterweiser — Metallurgical Editor

■ By now, just about everyone is thoroughly familiar with the advantages of vacuum-melted steels. These materials are especially suited for the most stringent industrial and ordnance applications. And in the opinion of many experts, consumable arc remelting under vacuum represents the epitome of the various vacuum techniques developed so far.

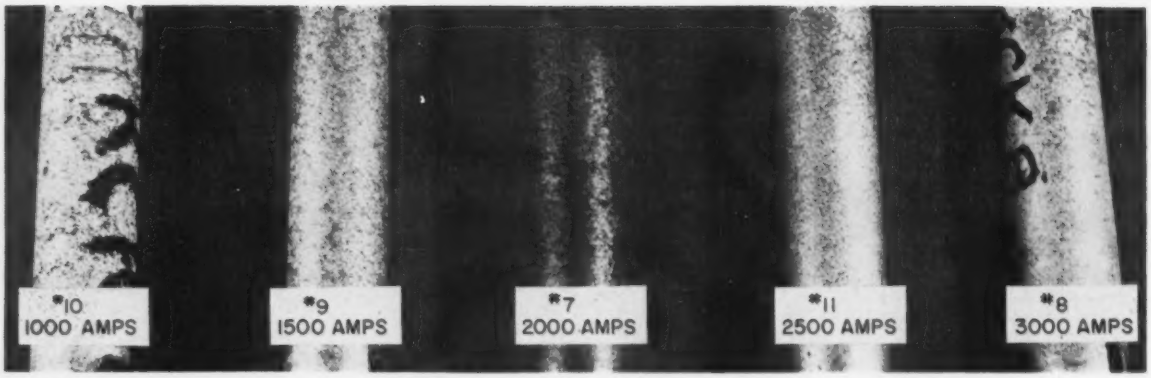
Certainly, in combination with other vacuum processes, the consumable electrode technique should approach perfection in steelmaking. But does it? And if it does, can it be depended upon to be reliably consistent?

Not Understood—To get to the point, the variables inherent in consumable arc remelting are proving to be a sizable shop headache. These same variables—at least to some degree—are contributing to the quality of the finished product. Most frustrating to all concerned is the fact that many—possibly most—of these melting variables are not completely understood.

While this matter of not knowing all the right answers is not uncommon nor of critical consequence, it is proving to be more and more annoying. The number of rejected heats (an aspect of vacuum melting that is rarely publicized) stands as a mute reminder of the problem's economic seriousness.

New Approach—The time has come for both producers and consumers to ask what's being done about it. Or, even more significantly, what can be done about it?

A promising approach has been undertaken by General Electric Co.'s Industrial Heating Dept.,



SURFACE CONDITION: Ingots with least porosity and lowest inclusion count will not necessarily have the best surface. The above ingots indicate some of the surface conditions obtained.

Shelbyville, Ind. Their engineers, spearheaded by Lloyd Johnson, decided to systematically check the major variables involved in consumable arc remelting under vacuum. Even though they've been at it for a comparatively short time, their efforts have served to shed a fair amount of light on some of the principal factors.

As equipment producers, the problem concerns them only indirectly. After all, the equipment functions satisfactorily — if you know how to handle it. But there is still a lot to be learned about operating techniques. Until loose ends are tied down, some melts are bound to be erratic and consumable arc remelting will fall short of its prime objective—consistent quality.

Seven Factors — At the outset, G.E. engineers decided to explore the seven key variables (all of them controllable) most likely to affect ingot quality. These are: arc current, arc voltage, stirring coil power, furnace pressure, crucible cooling water temperature, ingot size, and type of electrode. In addition to their effects on ingot quality, these variables also influence the safety and stability of the melt.

To adequately study each of these factors, it was essential that other possible variables be minimized. This meant choosing a test steel that was sufficiently uncomplicated in its chemistry so as not to create special variables of its own. At the same time, the steel had to be reasonably representative of conventional steelmaking practice. It had to be a common garden variety as opposed to a special alloy.

Other Virtues—Because it appeared to meet all of these qualifications, a C-1018SBQ (special bar quality) steel was chosen for use in all tests.

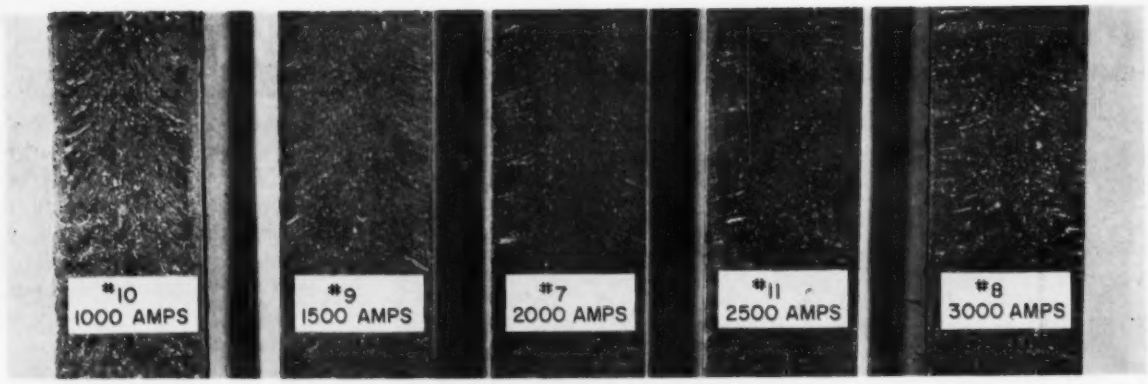
In addition to its other virtues, 1018 was not likely to torpedo the laboratory budget. It was felt, too, that the changes in melting variables produced with a 1018 steel would at least approximate the kinds of changes that would be obtained with other metals. Only the magnitude of changes needed to get the same effects would be expected to vary.

These 1018 bars, in 6-ft lengths, were used as consumable electrodes. Most tests were run with 2 in. diam bar stock. However, in a few cases, 1½ in. diam bar was also tested. All tests were run in a water-cooled copper crucible with a 4-in. diam.

Vacuum Equipment — Melting equipment consisted of a General Electric laboratory-size, vacuum arc melting furnace. This unit has a 3,000 amp direct current power supply with typical welder volt-amperage characteristics. In other

Table I | Variables In Vacuum Arc Melting

Ingot Number	Amperes	Volts	Pressure, Microns	Stirring Amps.	Cooling Water Exit Temperature, °F	Electrode Diam., in.	Ingot Diam., in
10	1000	21.5	3	0	88	2	4
9	1500	23.0	5	0	92	2	4
7	2000	25	8	0	90	2	4
11	2500	24	12	0	89	2	4
15	3000	26	15	0	95	2	4
21	2000	26	7	0	85	2	4
22	1400	24	3-4000	0	85	2	4
16	2000	25.5	10	5	92	2	4
19	2000	24.5	8	10	90	2	4
26	1300	25	5	0	95	1½	4
24	1250	24	4	8	95	1½	4
27	1250	25	5	0	135	1½	4



STRUCTURE: Low currents seem to produce grains that grow horizontally from the mold wall and turn abruptly upward. Higher currents may contribute to grain enlargement. Above are sample structures.

words, various current levels can be obtained by pre-setting the power supply characteristics.

The vacuum system consisted of a Kinney KMB-1200 pump and accessories. This is a lobe-type, mechanical, high-vacuum unit with a capacity of 1000 cfm. Pumping characteristics of this system are shown in an accompanying diagram.

Control of the arc was maintained by an amplidyne (rotating amplifier) control system. This positions the consumable electrode in response to errors in arc voltage as small as 0.1 volts.

Although 30 ingots were melted and examined, some idea of the range and nature of the variables checked can be gained from an accompanying table. Arc current, for example, ranged from a low of 1000 amps to a high of 3000 amps. Arc voltage (which proved to have little effect) ranged from 21.5 to 26 volts.

Many Variables—Furnace pressure, measured in microns, ranged all the way from 3 to a maximum of about 4000. In all tests, no attempt was made to hold pressure at a constant level. The pumping system was allowed to seek its own level.

To avoid a hopeless scramble of variables, only one variable at a time was changed for each test—the only exception being furnace pressure.

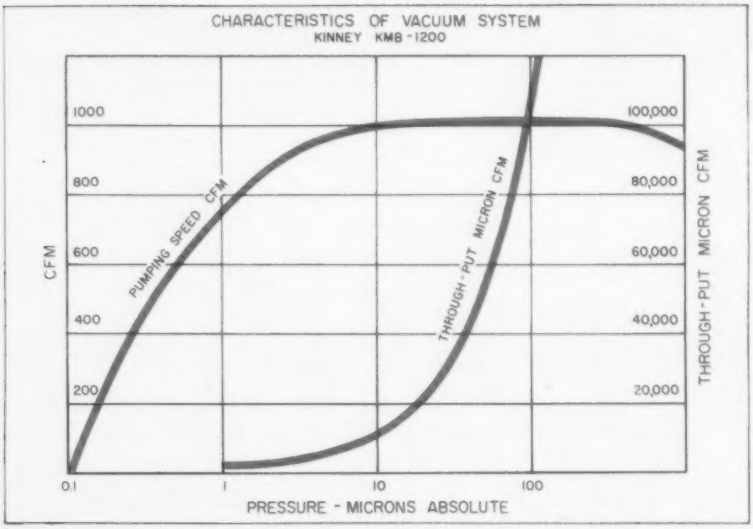
Because the program involved the production of a total of 30 ingots, no attempt will be made to review the findings derived from each individual ingot. Some representative samples of variation in surface condition and cleanliness can be judged from the photographs.

Although this result was not anticipated, even the poorest of the ingots produced was of high quality and would have passed conventional acceptance standards. In part, this might reflect the relative simplicity of the alloy melted, its initial high quality as bar stock, or both.

Major Results—The real value of the program is to be found in the effects produced by altering each of the key variables. However, not all variables proved to be of equal significance. Some, it turned out, were relatively inconsequential. Here are the more sig-

Table II | Manganese Segregation In Vacuum Arc Melted C 1018 Ingots

Ingot Number	Location	Manganese, pct ¼ in. from Center	¾ in. from Center	¾ in. from Surface	¼ in. from Surface	Remarks
10	Electrode	.71	.72	.69	.67	2 in. diam. C1018 SBQ
10	Center	.53	.47	.49	.59	Low current Low pressure
7	Top	.65	.60	.64	.63	
7	Center	.60	.67	.68	.66	Intermediate current
7	Bottom	.64	.61	.64	.64	and pressure
15	Center	.60	.64	.65	.64	High current High pressure
22	Top 1	.59	.65	.63	.62	
22	Top 2	.68	.64	.61	.66	
22	Top Center 1	.63	.64	.64	.63	Intermediate current
22	Top Center 2	.64	.65	.66	.62	low pressure to start,
22	Center	.57	.61	.55	.57	with gradual build-
22	Bottom Center 1	.58	.54	.59	.56	ings to very high pressure
22	Bottom Center 2	.54	.55	.56	.57	
22	Bottom	.56	.59	.56	.52	
19	Center	.57	.61	.61	.61	With stirring
27	Center	.66	.65	.66	.62	High mold temp.



nificant conclusions that can be drawn from test results:

Surface Condition — The ingot with least porosity and lowest inclusion count will not necessarily have the best surface. Essentially, this means that it is definitely unwise to stake ingot quality on the sole factor of surface condition.

Where surface condition is important, higher currents, stirring, a high mold temperature, and a low arc voltage will definitely contribute to a better surface condition. One variable to be guarded against: a good surface condition is difficult to achieve when the electrode is too small for the ingot size.

Micro-porosity and Cleanliness —Few specific conclusions can be drawn regarding these two factors since neither showed up to a serious degree in the ingots made. There is a possibility, however, that the intermediate current range may contribute to both a higher inclusion count and greater porosity. Both higher and lower current levels seem to be the better bets. This is only a tentative conclusion because it is based on an inadequate sampling.

The contributing factor of spatter on the mold walls may be highly significant. At low current levels, spatter is not remelted and remains as a kind of skull on the mold walls. It does not affect the bulk of ingot metal. Conversely, at high current levels, spatter is entirely remelted and well mixed into the mass of the ingot.

At intermediate current levels, a half-way condition seems to exist. Some spatter is remelted but not well distributed. This may affect porosity and inclusion count adversely.

If this conclusion proves to be valid, it should come as welcome news to commercial producers. Some use very high currents to get maximum production. Others are limited to the use of lower currents because higher currents are not available. Intermediate current levels, therefore, are not a problem in commercial practice.

Grain Structure—Low currents appear to produce grains which grow horizontally from the mold wall and turn abruptly upward. This tendency is lessened by both higher current and higher mold temperature. There is some evidence that higher current levels may contribute to grain enlargement. Stirring can lessen this tendency and, in some cases, actually reduce grain size.

Where fine grain is not a critical factor, or where it can be compensated for in subsequent processing, there may be a quality advantage in going to higher current levels. In the heats tested, the cleanest and least porous were all run at higher currents.

Sulphur and Manganese—A 1018 steel normally contains about 0.05 pct sulphur and 0.60-0.90 pct manganese. As far as these elements are concerned, two questions are of general interest. What effect does consumable arc remelting have upon sulphur content and distribution? Secondly, what happens to initial manganese content?

Based on test results, sulphur content is not reduced and its distribution is entirely homogenous throughout the ingot mass. There was no evidence of gross segregation of sulphides in any of the ingots produced.

Consumable arc remelting appears to lower original manganese content by about 10 pct in the average heat. There is also evidence of a slight redistribution of this element. Specifically, manganese content at the surface and at the center of the ingot appears to vary. At present, the cause of this redistribution is not known.

A few other operating factors observed during the course of the test program are also of general interest. It was noted, for example, that a certain minimum current density was needed in order to maintain a stable arc without stirring. This minimum level was approximately 300 amps/sq. ft.

On the other hand, it was also found that any increase in arc voltage or stirring intensity made it necessary to increase amperage in order to maintain an arc. When current was varied from 1000 to 3000 amps, furnace pressure fluctuated from 2 microns at 1000 amps to 15 microns at 3000 amps.

All of these results are admittedly preliminary. Many are not conclusive.

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Punch Cards Lead Drive To Automatic Mill Control

Automatic controls for rolling mills are definitely on the upswing.

The rash of punch card systems underway points up control gains all down the line.

But operating men want more cost data and proof of better performance.

By G. J. McManus—
Pittsburgh Regional Editor.

▪ Experts on steel mill controls find themselves between two fires.

On the one hand they are beating down talk that the push-button steel mill is just around the corner On the other, they face complaints of operating men that expensive new controls have brought no significant tonnage or quality gains.

Occasion for this confusion is a sudden spurt in control applications for rolling mills. Over the past few years, most tin mills have been converted to some form of automatic gage control. Last year punch-card controls came into the picture with installations on reversing roughers at Allegheny Ludlum Steel Corp. and Jones & Laughlin Steel Corp.

SPEED CONTROL: Closer control of mill speeds is a must for better uniformity. Here is control pulpit for Republic's new 11-in. bar mill.

Punch Cards Gain—Punch-card controls are now going on 15 rolling mills including tandem mills for structurals and cold rolled sheets. A new concept of instantaneous gage control is about ready for display on a Sendzimir mill. The first automatically-controlled hot strip mill started running about two months ago.

In the other corner, operating men point out that the new gage controls have brought no reduction in commercial tolerances. Some say a good operator can equal or better the tonnage produced with automatic controls.

Regarding punch-card controls, they point to the fact that many new mills are sticking to slider panels, which date back over 20 years in their basic design. EC&M Div., Square D Co., has sold 11 panels over the past two years. Armco Steel's $135-million modernization program included two of the preset panels and no punch card controls so far.

Show Better Quality — It isn't easy to find clear-cut answers in this area. Gage graphs of cold mills at U. S. Steel Gary Works and Jones & Laughlin's Aliquippa Works show improved quality with automatic control.

But it's difficult to measure the improvement in terms of customer

satisfaction and reduced scrap. Improvements all along the rolling process are reducing the margin of error significantly. You can't pinpoint any single control as making a decisive difference—but neither can you afford to overlook any one, say control men.

Jones & Laughlin is hitting about 2100 tons a turn on a card-controlled reversing rougher at Aliquippa. The roughing cycle is averaging about 58 seconds for an 18,000-lb slab.

The mill width of 38 in. tends to keep tonnage down. It is limited now by slab heating capacity. Slab travel could be reduced. Ultimately, J&L hopes to get about the same tonnage as a roughing train from its reversing mill.

Program Functions—Of the 13 punch-card systems coming up, the most spectacular will be on U. S. Steel's new structural mill at South Chicago. The blooming mill for the plant is being built by United Engineering & Foundry with controls by Westinghouse Electric Corp. Programmed functions include screwdown opening, entry speeds and acceleration rates. The bloom will be automatically turned and manipulated.

Structurals stands for the same mill are being built by Blaw-Knox with controls by General Electric Twenty-three functions are being programmed. Separate cards will control indivdual stands but programs will be tied together in complementary fashion.

More Power for Hot Mills—Hot-strip mills will probably provide the biggest control gains over the next few years. Gage correction is approaching practical limits on cold mills. Producers have got to start with more uniform hot bands if they are to improve the final product.

To get new uniformity, the mills are doing three things. They are building more power into hot mills. They are getting closer speed control. They are working on a wide variety of gage regulation systems.

The power-up program is shown by Armco Steel's 56-in. hot mill at Butler, Pa. It will have 33,000 connected horsepower or 589 hp per in. of rolling width. That's one of the biggest power concentrations ever for a hot mill.

Seek Closer Control — Closer speed control is regarded as one of the keys to gage control. By having quicker speed response, the mills can reduce looping and stretch. Also, they can play with tension as a means of controlling gage.

Most mills are working with some system to reduce trailing end taper. Both screwdown and tension have been used to compensate for the tapering effect. Corrections have been preplanned rather than automatic.

Automatic control for cold mills is approaching a plateau period, says one authority. There is considerable activity in the field but economic reasons may bar radical changes in the near future.

One trend may be toward simplified control systems as the performance of hot mills improves. Jones & Laughlin has developed a control that employs only a single X-ray gage and works through tension alone.

J&L reports good results with the system on a five-stand tin mill at Aliquippa. The company feels it is getting control that is equal to or better than the conventional systems (which use two gages and adjust both tension and screwdown.)

Cut Maintenance—If the single-gage system proves widely practical, there will be hefty savings. The elimination of one X-ray gage lops about $50,000 off initial costs. In addition, maintenance and policing problems are simplified.

Another interesting development involves the use of a load-cell type control for a sheet mill in the Pittsburgh area. Canadian mills have used the load cells but this will be the first domestic application.

Punch Card Systems Take Hold

Mill Installations Completed or Underway

MILL	LOCATION	MILL	SUPPLIER
Allegheny Ludlum Steel Corp.	Brackenridge, Pa.	Reversing Rougher	GE
Jones & Laughlin Steel Corp.	Cleveland	Reversing Rougher	GE
Jones & Laughlin Steel Corp.	Aliquippa, Pa.	Reversing Rougher	Westinghouse*
Inland Steel Company	Chicago	Universal Slabbing	GE
(Eastern Mill)	.....	Reversing Plate	GE
United States Steel Corp.	South Chicago	Structural	GE
	South Chicago	Blooming Mill	Westinghouse
	Gary, Ind.	Universal Slabbing	Westinghouse
	Duquesne, Pa.	Blooming (2)	GE
	Monroeville, Pa.	Pilot Mill	Westinghouse
Empire Steel Corp.	Mansfield, O.	Reversing Rougher	Westinghouse
Nippon Kokan Missui Works	Japan	Reversing Rougher	Westinghouse
C. I. D. Fundidar	Mexico		GE
(Eastern Mill)	.....	Blooming	E C & M**

* One Westinghouse control is going on an aluminum mill.

** Preset slider panels of Electric Controller & Mfg. Div. have gone on 11 steel mills in 1957-58. Five card controls made by E C & M are going on aluminum mills.

Log Production Data — Data-logging systems are being applied generally on tinplates lines. All of U. S. Steel's tin mills have or will shortly have at least one electrolytic line equipped with them. The systems log a total of eighteen items of production data.

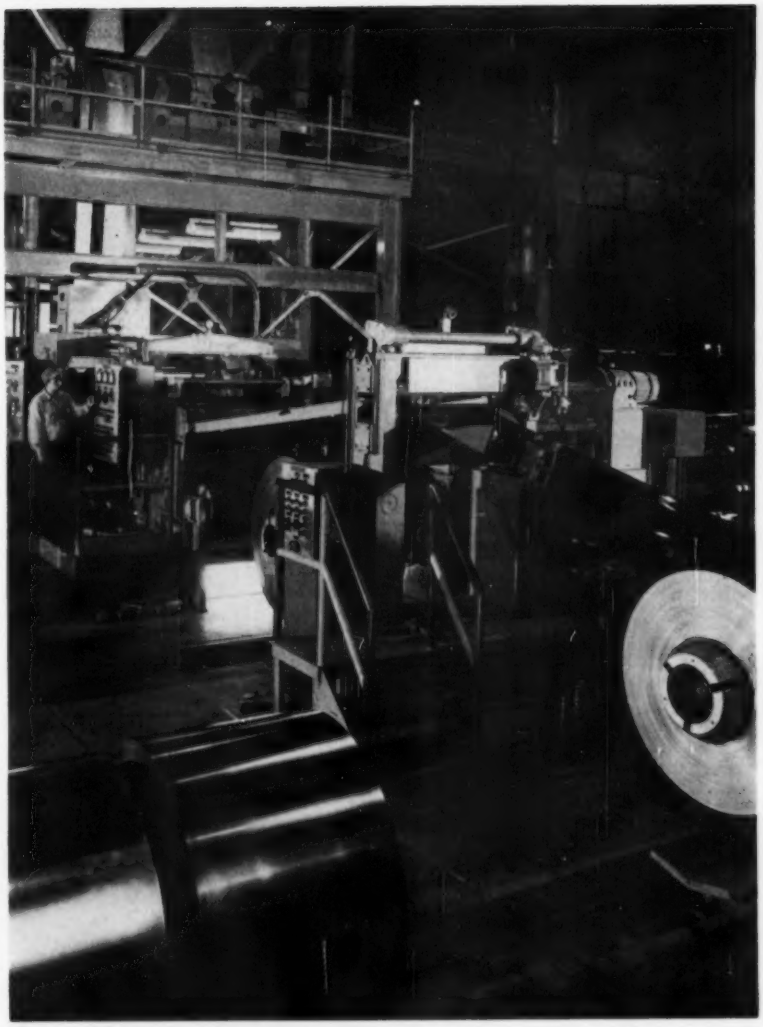
Other tin mills are going to some form of data logging. They are supplying tinplate in coils and have no way of sorting out imperfect stretches. For quality control and accounting purposes, they must have some record of what goes into the coil.

In the U. S. Steel system, six of the eighteen items require visual inspection and manual recording. The big problem is finish. U. S. Steel uses a system of rotating mirrors which make sections of the strip appear to move slowly for intermittent inspection.

Use TV Scanner—General Electric has developed a promising inspection system for finish inspection. It uses a television scanner to pick up changes in reflectivity.

Data logging is being tried on one sheet mill today. As a coil goes through the mill, information on gage, width and length is stored. This information prints out on a tape along with the order number and other accounting dope.

At another plant, data logging will be tried on a hot strip line. Temperature, gage and order number will be recorded.



LOG TINPLATE: All of U. S. Steel's tin mills have or will have at least one electrolytic line equipped with data system. This new tinning line at the Columbia-Geneva Works coats up to 1250 ft per minute.

Where Computers Stand—Computer control of production planning and scheduling is still a way off. The cost and lack of essential data make it impractical for now.

The idea of a "thinking" control for steel production takes in two distinct types of activity. One is central scheduling and planning. The other is local control of an individual mill.

Of the two the first is closest. There are now specific projects aimed at putting planning and scheduling in the hands of a computer. The first such application will come within five years, predicts one man who is on top of developments.

The idea of computer controls for individual mills is more remote but still very much in the picture. Under this concept, the mill would be told only what results were wanted. It would size up an approaching piece of steel and devise the most efficient way of producing desired results.

What Control Men Want—Control men say their great needs are for more data and more instruments to get the data. They want sensing devices that are faster, more precise and more versatile.

They want to be able to gage the plasticity of a slab before they start to squeeze it. They want to know more about the relation of pressure to plastic flow. They want some instantaneous method of measuring a flow of steel from one place to another.

A flow meter for steel is called one of the most critical needs by one expert. For efficient planning and scheduling, he says you have to know how much steel is flowing into an ingot mold, how much is squeezing through a mill. You have to know this instantly, he says; not after pouring and rolling.

Will the Big Demand for Oxygen Come from Openhearths?

By J. J. Obrzut—Technical Editor

The sharp upward trend in basic oxygen steelmaking has created some concern as to which way openhearth practice will go—up or down.

There are strong arguments both ways, but the use of oxygen in openhearths is only beginning.

■ Ask any steelmaking experts how their respective firms ought to spend their money to expand capacity and you'll get such a variety of answers that there's hardly a common ground for thought. The lone exception, at least in principle, is in the use of oxygen. And even here, each expert relies on his own yardsticks, his own set of statistics, and all the outside expert advice he can get.

The proponents for basic oxygen steel point up the fact that the availability of low cost oxygen is definitely working in their favor. Last year's capacity by this process had been doubled. It will again be doubled this year. And by the end of 1959, it will reach a total of at least 4.4 million tons.

Big Question — Will the rapid growth of the L-D, Kaldo and Rotor processes cause an eventual decline in openhearth practice? Many contend that it will—that the growth pattern is more significant than the tonnage figures at this early stage. Moreover, they argue, capital costs are only half as much as for openhearths to deliver the same annual tonnage.

Opponents claim that the facts don't support this kind of thinking. They caution that anyone predicting the obsolescence of a process "must never neglect to reckon with the potential technological advances which may improve the established (openhearth) process." These are the words of M. W. Lightner, vice president, and D. L. McBride, director of metallurgical process development, applied research, U. S. Steel Corp.

Offer Proof—To support their claims, they ask for a look at the record. In 1935, the U. S. had 756 hot metal openhearth furnaces in operation. By 1957, this figure had climbed by one to 757. "How then," they ask, "has it been possible to increase the annual capacity of these furnaces by nearly 50 million net tons of ingots and castings?"

They advance several reasons: (1) abandonment of obsolete shops with small furnaces and the build-

CLOSE LOOK AT BATH: Oxygen streams in on molten bath in openhearth. In this heat, carbon dropped from 0.20 to 0.05 pct in 20 min.

ing of modern shops with large furnaces, (2) increasing the hearth sizes of existing furnaces, (3) improved materials handling methods, and (4) getting better combustion with respect to furnace output and longer refractory life.

The results obtained over the past 10 years have been encouraging. Fuel consumption has been cut, furnaces now last longer, and tap-to-tap time has been reduced from 12 hours to 10, and in many cases even lower. A number of openhearths are now getting an output of 30 or more tons for every 1000 sq ft of hearth area whereas an output of 20 tons per hour was considered satisfactory only 10 years ago.

Opponents Disagree—Critics of the openhearth process say that the economic and technical cards are stacked in favor of the basic oxygen steelmaking processes at the expense of the openhearths. Most of the increased capacity of the openhearths, they contend, has been achieved by increasing the size of the units rather than by any sizable boost in the driving rate of a furnace. This, they consider as no great advancement—at least, not good enough to stay in competition with the basic oxygen processes in the years ahead.

While the larger openhearths have accomplished their mission of producing more steel, they have been at some economic disadvantage. The larger tapped heats place an extra burden on soaking pit capacity, and if the peak load periods become bunched, capital expenditures for additional facilities are inevitable. Larger furnaces and added soaking pit capacity also mean that more floor space will be needed.

Penalty for Size—Ladle charges of 250 tons and more require huge cranes, ladles and structural supports. This, of course, adds further to the over-all costs. However, these are partially offset by the use of high-strength steels.

Even those who see a receding future for the openhearths concede that they continue to hold a dominant position in steelmaking because of certain inherent advantages. They include: (1) better control over oxidation, (2) ease in removing phosphorus and nitrogen from steel, (3) ability to use varying proportions of scrap to iron, (4) lack of concern over pig iron quality, and (5) versatility in producing many different grades of steel.

AIDS COMBUSTION: Openhearth operators set oxygen lance through front port as they get ready to speed combustion and decarbonization.

Openhearth operators, meanwhile, continue to make both the process and equipment more efficient. Oxygen is now used by many shops for combustion as well as for decarburization. Some authorities feel that the big plunge to oxygen in the openhearths is still to be taken. Some believe that it's imminent.

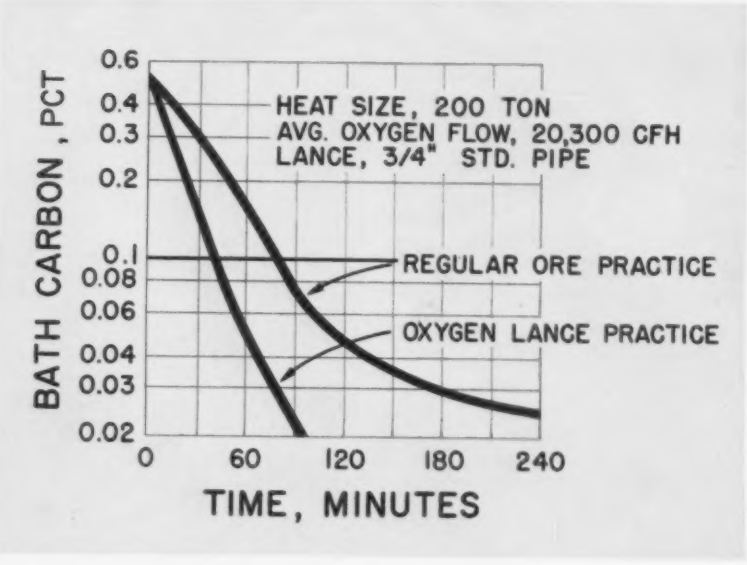
Some recent figures on the consumption of oxygen in openhearth practice were presented by J. F. Allen, chief fuel engineer, Consett Iron Co., Ltd. Tests conducted over a 3-year period showed an average saving in charge-to-melt time of about 1¾ hours. Old furnaces using oxygen performed as well as new furnaces without oxygen. Had higher flow rates been used, another 10 pct in charge-to-melt time could have been saved.

Higher Savings Possible — According to Allen, the average working rate for the first 3 months of 1957 was 13.2 tons per hour—an increase over non-oxygen practice of about 17 pct. However, this working rate was established in spite of inadequate oxygen supplies at times, and the usual and unusual production delays.

Roof life was shortened about 6 pct by using oxygen, but it was felt that an improved roof brick would correct this condition, at least to the point of not being a serious problem. And oxygen which was used to aid combustion reduced the amount of fuel required by about 15 pct.

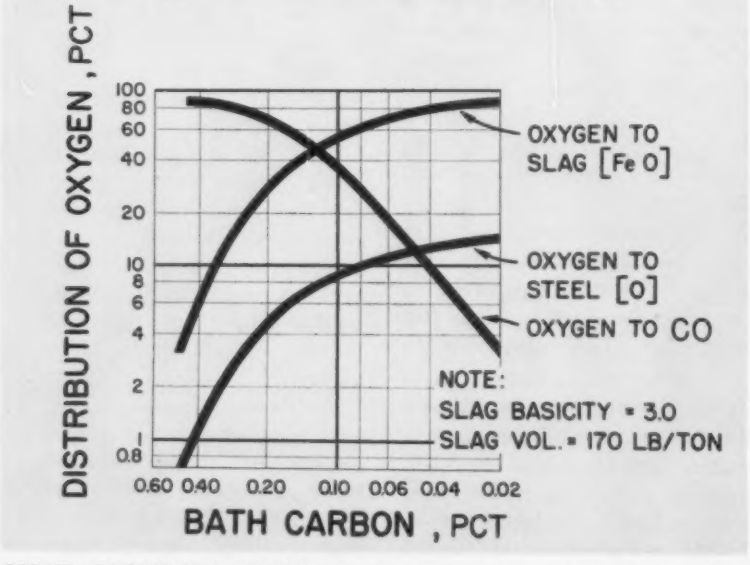
A Russian report by A. V. Leskov on openhearth practice, using oxygen, at the Zaporozhstal works reveals that by enriching the flame with a 25-pct oxygen addition, hot metal could be added 30 to 40 minutes sooner, and tap-to-tap time reduced by 40 to 50 minutes. The 1955 tests also showed, oddly enough, that the life of the furnace, having a magnesite-chrome

How O_2 Speeds Decarb Cycle



WIDE DIFFERENCE: Reason why carbon removal rates vary between use of ore and oxygen is that ore absorbs heat and limits amount that can be added. The amount of slag and metal splashing on the refractory is the only limitation to oxygen injection. To speed decarbonization, enough oxygen must be used to also saturate steel and slag.

What Consumes Oxygen



SPLIT AMONG ELEMENTS: Here's the way oxygen is used to perform its various functions. With constant oxygen input, amount available for decarbonization drops sharply as carbon content decreases. At 0.50 pct C, 95 pct of the oxygen reacts with carbon. Steel and slag absorb 5 pct. At 0.05 pct C, only 15 pct reacts with carbon.

roof, was actually improved in oxygen service. It lasted for 470 heats.

Feed Through Roof—To improve on the previous method, the water-cooled lances were installed in the main roof through fixed water-cooled rings. This method shortened boil time by 50 pct and tap-to-tap time by one hour with only a slight increase in oxygen consumption.

A combination method proved best—feeding through the flame and jetting through the roof lances. Tap-to-tap time was reduced from 9 hours to 5 hours by this technique.

Success stories on the use of oxygen in the openhearths keep pouring in. Many U. S. plants are now using retractable water-cooled roof lances in regular practice. Some steel producers are still talking of "working out the minor bugs" in both the roof lance design and refractories, but one producer ran 70 heats with a water-cooled roof lance that showed hardly a sign of wear.

Oxygen Favored—With time, the statistics seem to favor oxygen practice more and more. A. L. Hodge, staff engineer on gas process development for the Linde Co., in a paper presented before an AISE regional meeting in Detroit, made these comparisons: "To decarbonize a heat from 0.20 to 0.08 pct carbon required 40 minutes with ore and 22 minutes with oxygen. However, to decarbonize a heat from 0.15 to 0.03 pct carbon required 115 minutes with ore and about 47 minutes with oxygen . . . a saving of 68 minutes . . . With present 'Cost Above' figures of $2 to $3 per minute of furnace time, these savings are significant."

To oxygen producers, the total conversion of openhearths to oxygen practice opens a vast potential. With oxygen flow rates for roof lancing running as high as 80,000 cfh, and with more than 750 furnaces to supply, oxygen consumption could conceivably skyrocket such as it has never done before.

Erie Mining Co.

TIE-UP: Slow steel market brought out only 163 ore boats compared to full fleet of 251 last year.

Iron Ore: A Slow Year Points Up Changing Supply Pattern

Imports are shaping up as a real threat to domestic ores.

In a year of reduced steel demand, Lake Superior shipments are way off. But imports are holding within 10 pct of 1957.

And next year, volume shipments of Labrador ores will flow into the Great Lakes.

By T. M. Rohan — Cleveland Regional Editor

▪ In one of the quietest iron ore seasons in years, a big struggle is going on which will stake out industry operations for years ahead.

Basically, the tug is a three-way pull between Mesabi direct-shipping ores, pelletized ores and a host of foreign projects.

This year the Lake Superior district ores are taking a heavy blow from imports. The trend was not unexpected but few expected such a sharp decline.

Shipments Way Off—Based on the first six months, Lake Superior district shipments are not even half of last year's. But imported ores are within 10 pct of last year. If the rate was projected for this year, the Lake Superior district's share of the U. S. total would be a measly 35 pct. Last year it hit 54 pct and its historic share was 70 pct or better.

This is only the softening up for 1959 when Labrador ores will come through the St. Lawrence in volume into the Great Lakes district, heart of U. S. steelmaking. Shipments from Labrador on the small lakers were already up to 2 million tons last year.

The first big Labrador project—Iron Ore Co. of Canada — was predicated on competing directly with Mesabi ores on an iron unit basis delivered to lower Lake Erie ports. In a slow year and without this big market, Labrador ores still were up to 70 pct of last year's rate in the first half.

Lack Storage Space — Taconite pellets from Silver Bay are almost 80 pct of last year. Short-term sale of excess pellets on the open market was very slow. Simple lack of storage space in a glutted market was one big reason.

Steep Rock has put a new concentrating plant in operation cost-

ing $2.25 million. It will turn out 5500 tons per day of 58 pct iron ore from underground mines for blending. A second plant nearby will start next year. Charleson Mining Co., adjoining Steep Rock, is also starting a concentrating plant for lower grade material.

Guard Yield Data — Reserve Mining Co. is currently involved in a lawsuit with Mesabi Iron Co. over compensation on the taconite properties. No market price has been published for taconite pellets although small amounts from Reserve have been sold on the open market. Two years ago, Canadian pellets sold for $1 premium over the base grade Old Range Non-Bessemer. The extent of the increased blast furnace yield they give is also closely guarded for this reason.

Taconite pelletizing plants, such as Reserve and Erie Mining Co.'s in Minnesota, have been hailed as the answer to exploiting lower grade Minnesota ores. Yet the largest ore consumer, U. S. Steel, has cast its pelletizing lot in softer Quebec ore for a major 8 million ton per year concentrating plant. It already has a 600,000 ton per year pilot and research plant in Minnesota which was unofficially set to be expanded into a 10-million ton taconite plant by 1959.

Other steel firms are going elsewhere too. Jones & Laughlin has optioned property in Quebec near the Quebec Cartier project of U. S. Steel with Cleveland Cliffs. M. A. Hanna is exhaustively searching its Brazilian project of St. John de'el Rey Mining Co. to work out the economics. Cleveland Cliffs is also involved in the Rio 'Doc project in Brazil shipping 67 pct Fe open-hearth lump ore. Cliffs jasper pellets from Upper Michigan have also been strengthened lately by finer grinding.

Seek Ideal Feed — The whole trend for the foreseeable future, including direct reduction, is toward higher and higher grades of iron ore to get more iron from present blast furnaces and eliminate building new ones. To get the high production, the finest ore must be used. Price becomes a lesser obstacle. Although plants and workers put a high-processing cost factor on pellets, blast furnace operators will put out the money to get the extra production.

Pelletized taconite is a prime example of a processed raw material as close to the ideal feed as practical. Some feel it can double pig iron output under theoretical ideal conditions.

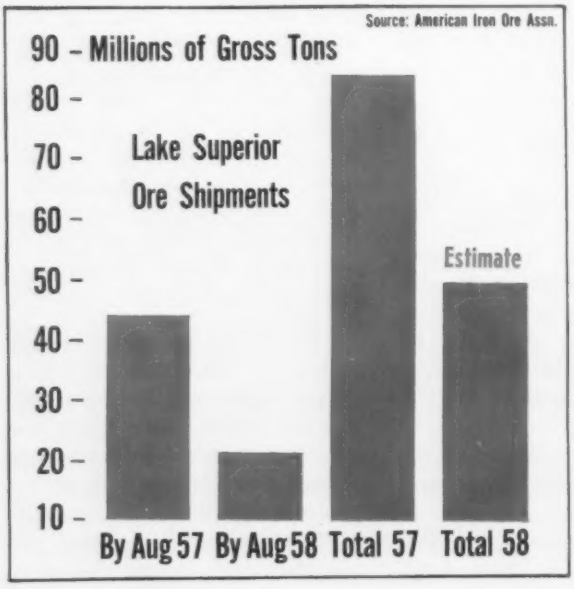
The depletion of high grade Minnesota ores is the biggest but not entire reason for the shift to new sources. Another is taxes. In rather strong words for a U. S. Steel president, Clifford F. Hood pointed out to Minnesota's Gov. Orville L. Freeman this spring that 39 pct of all U. S. Steel local and state taxes are paid in Minnesota.

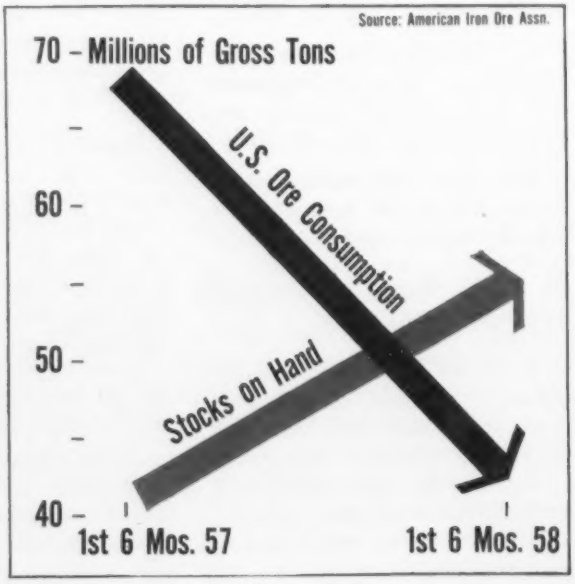
The usually non-crusading U. S. Steel Quarterly quoted Mr. Hood as suggesting a tax structure comparable to that in other states including a "realistic reassessment of tax values for non-mineral properties and a downward revision of the level of expenditures by local jurisdictions on the Iron Range."

Imports Grow — The new ores are coming from all over the world and rose to 33.7 million gross tons last year. The biggest shipper to the U. S. last year was still Canada at 12.6 million tons according to

How Iron Ore Picture Is Shaping Up

Domestic Ores Are Way Off... Stocks Are Rising . . .





the Lake Carriers Assn., Cleveland. Only a shade behind was Venezuela at 12.2 million tons. Others are less than 3 million tons each.

A major reason behind the strength of foreign ores this year is that U. S. operators in foreign lands must keep operations at high levels to amortize the high investment.

Ore imports, except from Canada, (which leaves mostly Venezuela and Peru) were 10.1 million gross tons in first-half 1957 and still hit 9.2 million the first six months of this year. Lake Superior district shipments in the first half dropped from 28.3 million last year to 11.2 million the same period this year. These imports compete directly with Mesabi ore on an iron unit basis as far inland as Pittsburgh.

New Ventures—The first major Labrador development, Iron Ore Co. of Canada at Knob Lake (Schefferville), is still the only one shipping. About 8 to 9 million tons will come out this year. About 500,000 tons is going to Canadian mills, 2 to 2½ million tons to England and the continent, and the rest to the U. S.

U. S. Steel's Quebec Cartier Mining Co. will be completed about 1964. It will turn out about 8 million tons per year of ore beneficiated from 30 pct to 62 pct and supplement Mesabi ores and the Orinoco project in Venezuela. In the neighborhood, relatively speaking, Jones and Laughlin and Cleveland Cliffs have optioned property at Mt. Wright.

The maverick Canadian Javelin project at Wabush Lake should get off the ground soon with the solid backing of Pickands Mather of Cleveland, operators of the Erie Mining Co. taconite plant and new Hilton mines in Quebec.

Start Ungava Project — Farther north Cyrus Eaton's Ungava project is scheduled to start construction next year according to reports.

German interests in the project are cooperating on the study with American mining firms. Experimental pilot shipments of the 35 pct ore have been made to Germany for roasting, to the Lake Superior area for concentration, and then to Allis-Chalmers in Milwaukee for agglomeration into pellets.

Ultimately, it will be a 2 million ton per year, $110 million plant and securities will probably be sold in the U. S., Canada and Europe. The German interests will probably get the construction contract and handle much of the ore sales in their country.

Where Europe Buys — The European steel industry is reaching far outside its own hemisphere for ore.

About two thirds of English steel ingots are made from imported ore. English mills import about half their ore and the imports average so rich that it makes two thirds of the steel. About 15 million tons per year are imported, including about 2 million from Labrador, 4 million from Sweden, and the remainder in 60 or more varieties from Africa and Venezuela.

These tonnages run in the high 50's and low 60's in iron content compared to the home product of 30 to 32 pct.

Germany's home ores are even more depleted. They import 16-17 million tons a year, about 6 million from Sweden. Remainder comes from local deposits in the Saar Basin, Moselle Valley and Alsace Lorraine.

But Imports Drop Only 10 Pct

Reserve Mining Co.

MESABI'S ANSWER: Here taconite ore is loaded for hauling to nearby crushing plant.

Can Ultrasonics Improve Steel Ingot Quality?

The Russians appear to be sold on using ultrasonic energy to make better steel ingots. Are they on the right track?

Here are some of the pros and cons on an innovation that could have a big future.

By P. M. Unterweiser—
Metallurgical Editor

▪ Applied to pint-sized, steel ingots, the answer is "yes"—ultrasonics can appreciably improve their quality. But the crux of the matter is whether the same improvement can be obtained with the larger ingots generally used in steel mills. Is such an application technically feasible? Is it economically sound?

In the case of big steel ingots, new techniques such as vacuum melting and degassing obviously affect metal purity. But what about the quality of the ingot as a casting? What might be done to make it sounder, with a minimum of shrinkage, segregation, and other defects?

Show Promise — Rocking the ingot mold full of molten metal, or subjecting it to mechanical vibration, might conceivably do some good. Both methods have shown promise in the nonferrous foundry. There is also the beneficial action of induction stirring. Or as a last logical step—perhaps the ultimate refinement — could both mold and metal be subjected to controlled ultrasonic energy prior to, and during, solidification?

On at least a laboratory scale, all of these techniques have been checked by U. S. researchers. Most of their findings—whether hopeful or negative—were kept confidential. Then, early in 1957, along came the Russians with a report of their success with the ultrasonic treatment of steel ingots.

Big Plans — The Russians' success, as it turned out, was also limited to the pint-sized ingot. The largest produced as a result of their test program measured 8 in. square by 20 in. long. To this extent, their results were primarily of academic importance.

Still, they drove home a point that could have industrial significance. They made it clear that they were convinced of the practicability of applying ultrasonics to the "pouring of big ingots." These, they noted, "usually have large shrinkage cavities, porosity, segregation, and exhibit pronounced columnar crystallization."

Tests With Wax — Soviet researchers N. P. and E. N. Nikolaichik began their tests by experimenting with small ingots of paraffin wax. These were cast in a special chamber and subjected to ultrasonic energy. Intensity was sufficient to keep the upper layers of the ingot in a molten state while the rest of the ingot solidified.

After solidification, the wax ingots did not have the usual three zones of crystallization. Instead, they were uniform across their

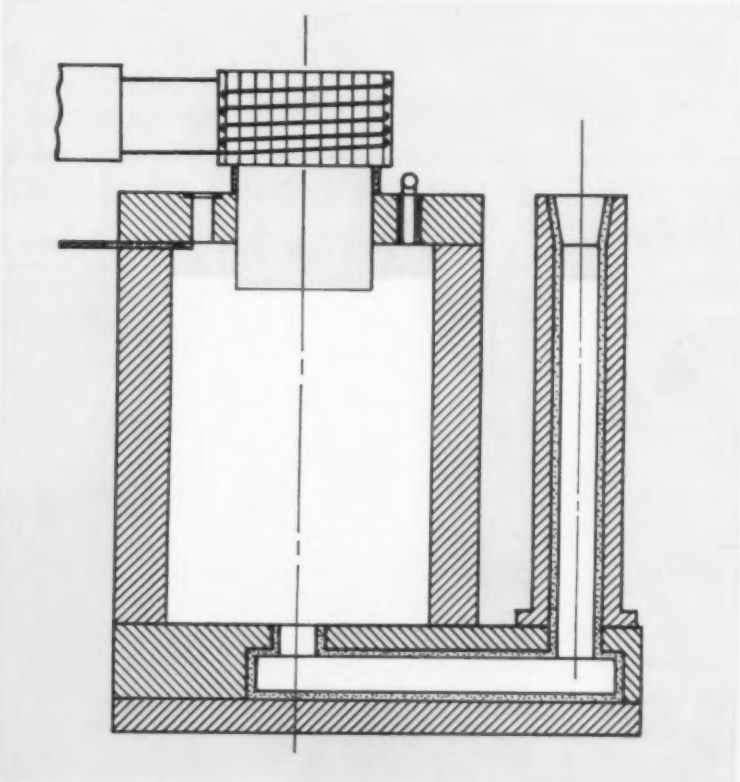


FIG. 1: Containing a square mold, this setup has a magnetostrictional type ultrasonic transducer located above the molten metal.

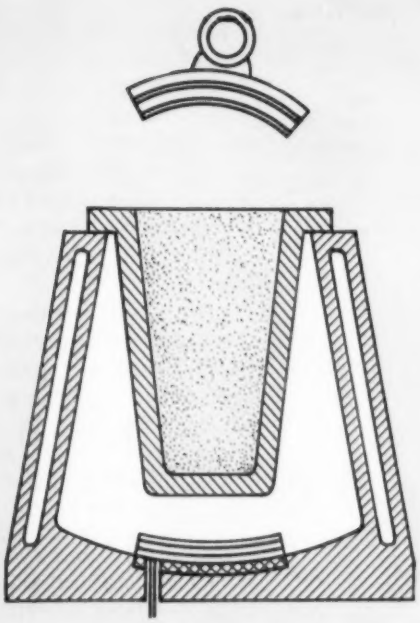


Fig. 2

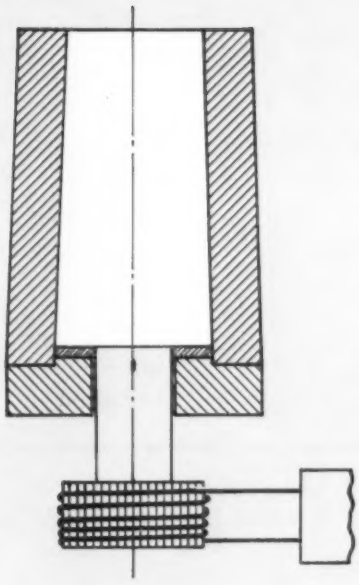


Fig. 3

FIG. 2: Here is an experimental setup for casting under ultrasonic energy. Outer shell is made of cast iron and is water-cooled. The transducer is located above mold in center containing hot metal.

FIG. 3: This is a cylindrical ingot mold with the transducer located below it. It has gray iron walls and a stool with a cast iron insert. Exciter winding encircles the rod of the transducer.

entire section and were made up of fine, equiaxed crystals. No shrinkage cavities were found in any of the ingots.

Hoping to capitalize on these surprising results, they extended their tests to the casting of small steel ingots. Some of the equipment used in these tests is shown in the accompanying drawings.

Use Square Mold — The largest test ingots were cast in a square, cast iron mold fitted with a runner for bottom pouring (Fig. 2). The setup provides for a magnetostrictional-type transducer at the top of the mold. The transducer is the source of ultrasonic energy which is transmitted to the molten metal by a rod that passes through the cover of the mold.

According to the Nikolaichik report: "When rimming steel is poured into a square-section mold, gases are liberated at a great speed from the metal and the steel circulates at a high rate. Analysis revealed only traces of oxygen and nitrogen.

"The rimming steel contained 0.07 pct carbon, 0.34 pct manganese, traces of silicon, 0.021 pct phosphorus, and 0.023 pct sulphur. An ingot of such steel, cast in the absence of ultrasound, contains 0.059 pct oxygen and 0.026 pct nitrogen."

Much Better — Macrostructurally, the specially treated ingot turned out to be a vast improvement. Only a tiny percentage of the ingot's cross-section contained even minor defects. These defects consisted of a honeycomb of very fine blowholes (0.02 to 0.08 in. diam.) about 1 in. from the surface.

In a conventionally cast ingot of the same steel, the blowholes were slightly larger but clustered closer (3/8 in.) to the surface of the ingot. Significantly, these defects were contained in about 50 pct of the total cross-sectional area.

Deep-Drawing — After the two ingots were rolled into sheet (5/64 in. thick), the ultrasonically-treated metal showed good deep-drawing properties. Ductility was excellent even after a 3-month aging period. At 35 to 45 pct reduction, not one specimen in 100 failed.

At the same level of reduction, 57 pct of the conventionally prepared steel had to be rejected for cracks and other serious defects.

In addition to producing a finer

Table 1 | Comparison of Mechanical Properties

Type of Metal	Ingot Treatment	UTS, psi	Elongation, pct
Rimmed Steel, .05–.12 pct C	Ultrasonic	55,900	50
	Conventional	49,800	30
Steel, .40–.50 pct C	Ultrasonic	106,700	20
	Conventional	64,000	15
Cast Iron	Ultrasonic	79,700	5
	Conventional	25,600	0

grained steel, the effects of ultrasonic energy appear to have appreciably improved mechanical properties. A comparison of properties for the steels tested is shown in Table 1.

Combines Virtues—The Russian report concludes that "casting under the action of ultrasound . . . unites in itself the advantages of casting under pressure and under vacuum." Not only does ultrasonic energy contribute to soundness and surface condition, but it "considerably decreases the solubility of gases . . . and improves mechanical properties."

What is the practical significance of the Russian experiment, if any? The immediate reaction of some U. S. experts is: "It is surprising what can be accomplished in degassing and improvement in mechanical properties in carbon steel. But the extension of this arrangement to larger charges will probably be unwise economically."

U. S. Reaction — The experts concede that it is relatively easy to "irradiate" small samples without concern for efficiency of coupling. But it takes a lot of money to scale up ultrasonic equipment for use with tonnage production. What's more, transferring the vibration from the generator to the molten metal becomes less and less efficient.

Although impressed with the "soundness" of the Nikolaichik research, Dr. Eric R. Morgan, Asst. Director of Research, Jones & Laughlin Steel Corp., feels that the ultrasonic approach to ingot quality is basically inefficient.

Certainly as a method for producing heat, the application of ultrasonic energy is not efficient. That leaves two other objectives: 1) to achieve degassing and 2) to refine grain size.

Not Fool-Proof — "There have been many claims about the use of ultrasound to produce grain refinement," comments Dr. Morgan, "but in many cases where success was claimed, there were other circumstances which might have been important. On the other hand, there have been many unsuccessful attempts to produce grain refinement by means of ultrasound.

"At first sight, the results of the degassing experiments are quite startling. But the use of small ingots may have favorably distorted the results. For example: the composition of the untreated steel is reported as 0.07 pct carbon and 0.059 pct oxygen. This is unrealistic for commercial-sized rimming ingots where it is rare for the solid ingot to contain more than 0.025 pct oxygen at the 0.07 pct carbon level.

Effect of Size — "The reported level of 0.059 pct oxygen would be reasonable for the liquid steel. It implies that very little carbon monoxide was released in the small ingot by rimming action. This is typical of the size ingot used by the Nikolaichiks and does not represent the conditions in commercial-sized ingots.

"There is the fact that both oxygen and nitrogen were reduced to trace amounts by means of ultrasonic treatments. This is indeed a significant achievement and one that may be accepted as reasonable. But is it the best way of achieving this objective?"

Can Sound Compete?—Dr. Morgan points out that the degassing of large quantities of steel can be achieved at low cost by stream degassing and other means. "In contrast, there is no ultrasonic equipment available which is capable of treating large quantities of steel. There is a possibility of obtaining sufficient power, but such a large-scale unit has not been constructed. Under present circumstances, how can ultrasonic degassing possibly compete with vacuum methods?

"Another clue to the efficiency of ultrasonic treatment can be found in the data on mechanical properties. The treated steel claims to have successfully passed the drawing test of 35 to 40 pct reduction. This same test can also be passed by regular rimmed deep-drawing quality steel made by open hearth practice and containing 0.005 pct nitrogen.

Not a Sputnik—"It is significant that the authors do not claim a nonaging steel but merely imply improved properties. In effect, they are comparing a Bessemer steel with an open hearth steel."

All of which adds up to the fact that the ultrasonic treatment of steel ingot on the pint-sized scale is not another Sputnik.

This does not detract from the value of an interesting experiment.

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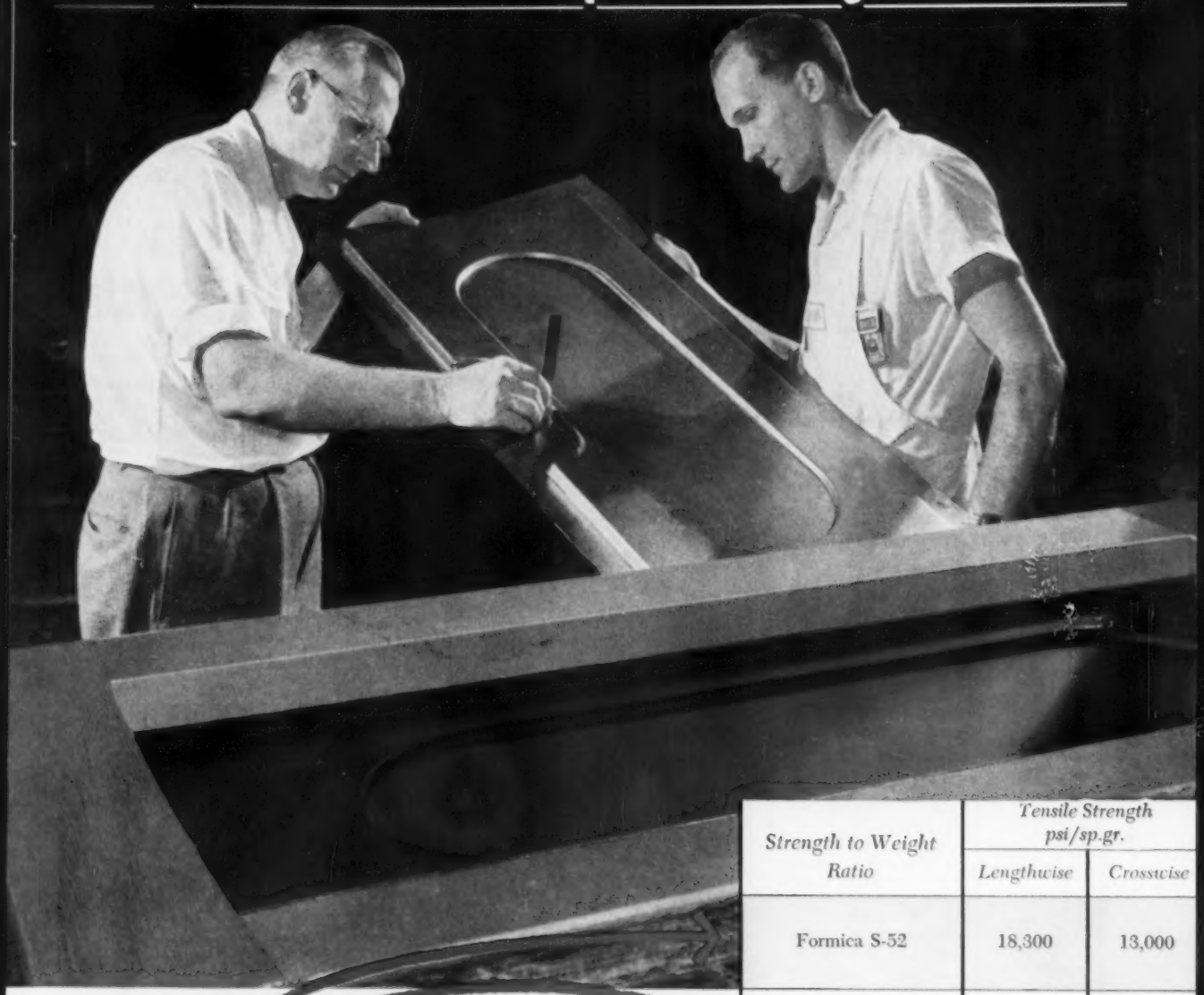

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For free copy circle No. 9 on postcard, p. 187

Tool Steels

In two dozen pages, a booklet 4132 sizes in 41 grades of tool steel. (Vulcan-Kidd Steel Div., H. K. Porter Co., Inc.)
For free copy circle No. 10 on postcard, p. 187

Dry Lubricants

Dry lubricants for ferrous and nonferrous metallic powders are described in an 8-page booklet. It aims at compactors of powdered metals. (Nopco Chemical Co.)
For free copy circle No. 11 on postcard, p. 187

Textured Metal

Main assets of textured metals, states a 4-page folder, are strength, durability, style, utility and economy. It discusses these. (Ardmore Products, Inc.)
For free copy circle No. 12 on postcard, p. 187

Diecast Nuts

A specification sheet includes standards for special types of diecast wing nuts. (Gries Reproducer Corp.)
For free copy circle No. 13 on postcard, p. 187

Power Units

A data sheet announces a new line of transistorized low-voltage, high current dc supplies. Outputs are 6, 12 or 28 v, 15 or 30 w. (Sorensen & Co., Inc.)
For free copy circle No. 14 on postcard, p. 187

Bending Machines

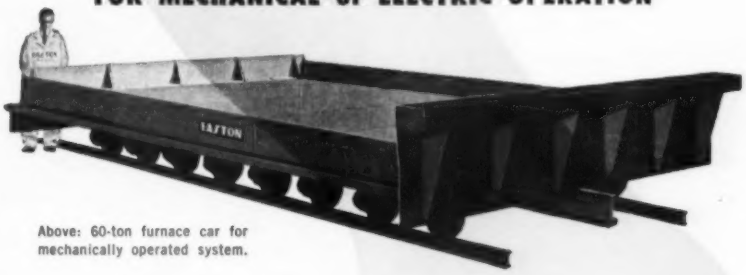
Air operated, a new line of bending machines are covered in a bulletin. It describes rapid working, light-duty metal forming equipment. (Taylor-Winfield Corp.)
For free copy circle No. 15 on postcard, p. 187

Thermometers

Disposable paper heat indicators are introduced in a brochure. They respond within ± 1 pct. A color

Furnace Cars

FOR MECHANICAL or ELECTRIC OPERATION



Above: 60-ton furnace car for mechanically operated system.

CUSTOM-BUILT and quality-built for dependable service. Easton experience includes all types of furnace and transfer cars for modern heat treating systems. Built to any desired capacity.

Write or telephone for technical information.

CUSTOM Trade Mark A-1088

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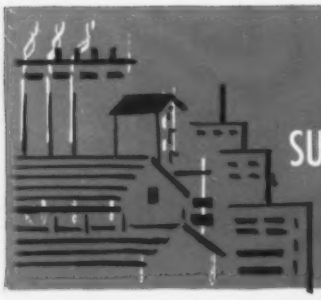
EASTON CAR & CONSTRUCTION COMPANY • EASTON, PA.



Safe and Efficient
SUPERVISORY CONTROL OF
SUB-STATIONS

A NEW FEMCO CONTROL SYSTEM

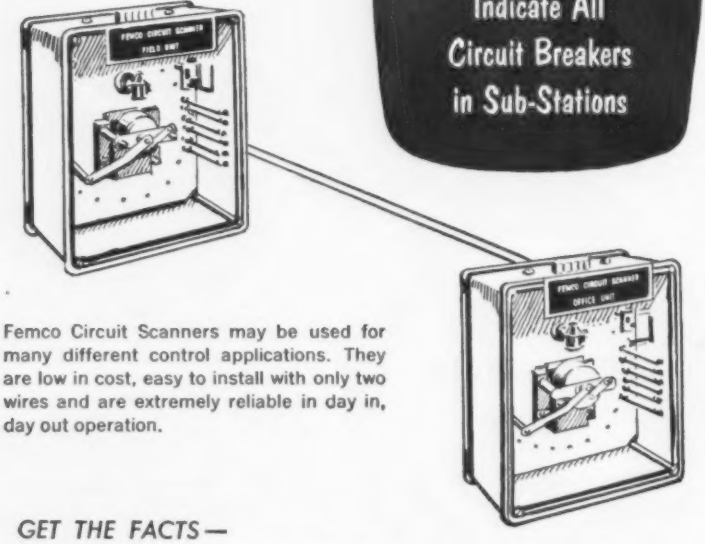
New Femco Circuit Scanners Now AC or Battery Operated

Using a single pair of wires, the system will provide supervisory control of all circuit breakers in sub-stations. Any number of stations may be wired to a central control cabinet in a single system.

Because the control equipment is powered from a separate source independent of the equipment being monitored, systems are safer to use with little chance of simultaneous power failure.

Systems may be installed to operate all on AC power or AC with standby battery or all battery-powered. Regardless of power used, the system always will be in synchronization.

Control and Indicate All Circuit Breakers in Sub-Stations



Femco Circuit Scanners may be used for many different control applications. They are low in cost, easy to install with only two wires and are extremely reliable in day in, day out operation.

GET THE FACTS—
ASK A FEMCO SALES ENGINEER

UNderhill 3-3200 **Femco, Inc.** IRWIN, PA.

COMMUNICATION • Electronic Engineers • AUTOMATION

FREE LITERATURE

change occurs at either 100, 105 or 110°F depending on the paper. Others cover the 115 to 490°F range. (Paper Thermometer Co.)
For free copy circle No. 16 on postcard, p. 187

Steel Tubing

Mechanical steel tubing is the subject of a new bulletin. The 8-page publication gives size ranges, wall thicknesses, approximate weights, standard mandrel bends and standard 90° bends without mandrels. (Rome Cable Corp.)
For free copy circle No. 17 on postcard, p. 187

Thermocouples

Thermocouple assemblies are described in a 12-page catalog. These heavy duty assemblies cover from —300 to +2200°F. Catalog covers six basic types, all standard gages and calibrations. (Thermo Electric Co., Inc.)
For free copy circle No. 18 on postcard, p. 187

Cast Stainless

Technical data on cast stainless steel appears in a 4-page folder. It lists 29 heat and corrosion resistant alloys for custom casting. A cross reference chart has ACI, AISI, SAE and ASTM designations. (Cooper Alloy Corp.)
For free copy circle No. 19 on postcard, p. 187

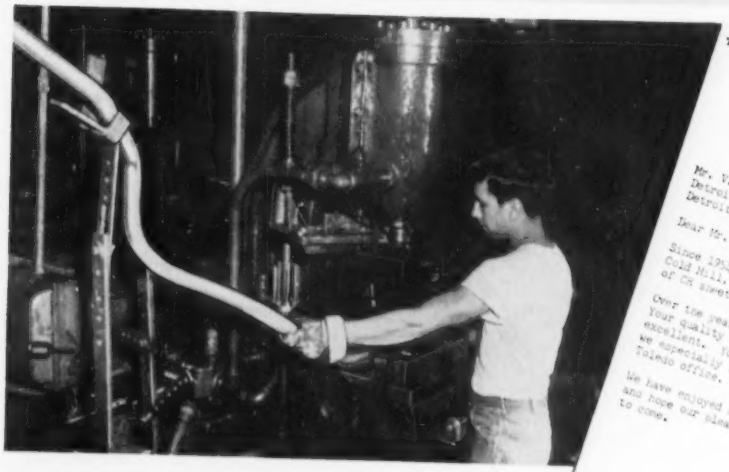
Rare Earths

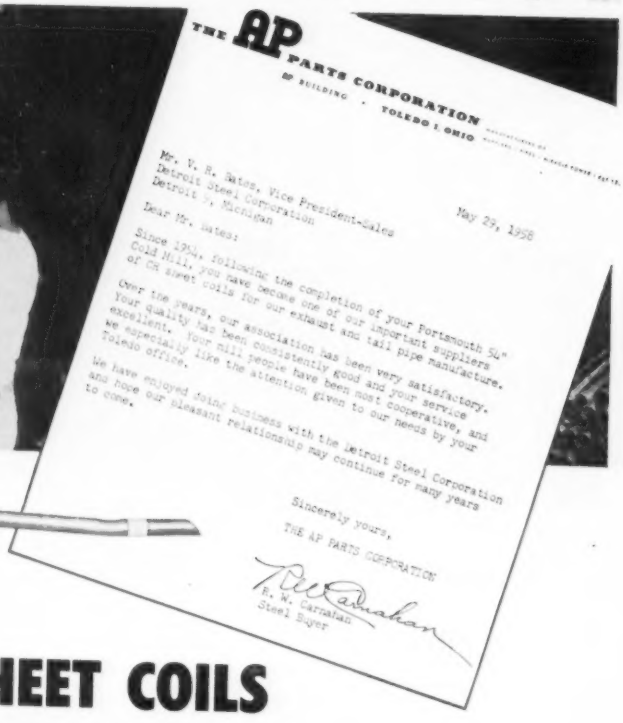
Three reference lists cover recent developments in industrial uses of the rare earth and thorium metals and alloys. (For free copy write on company letterhead to New Process Metals, Inc. 45-65 Manufacturers Place, Newark 5, N. J.)

Wrought Iron

"4-D Wrought Iron, A New Dimension in Corrosion Control" is an 8-page booklet. It introduces a new product that's 25 pct more non-corrosive than standard wrought iron. (A. M. Byers Co.)
For free copy circle No. 20 on postcard, p. 187

The PROOF of DSC STEEL is in its PERFORMANCE ON YOUR JOB





THE AP PARTS CORPORATION
50 BUILDING · TOLEDO 1, OHIO

Mr. V. R. Bates, Vice President-Sales
Detroit Steel Corporation
Detroit 1, Michigan

May 29, 1958

Dear Mr. Bates:

Since 1946, following the completion of your Portsmouth 54" Cold Mill, you have become one of our important suppliers of CR sheet coils for our exhaust and tail pipe manufacture.

Over the years, our association has been very satisfactory. Your quality has been consistently good and your service excellent. Your mill people have been most cooperative, and we especially like the attention given to our needs by your Toledo office.

We have enjoyed doing business with the Detroit Steel Corporation and hope our pleasant relationship may continue for many years to come.

Sincerely yours,
THE AP PARTS CORPORATION
R. W. Carnahan
Steel Buyer

DSC *AccuRolled*™ CR SHEET COILS

4½ year **Job-Performance Record** on AP PARTS Exhaust and Tail Pipes

January '54 through June '58
Score 99.9% Plus

A WORD ABOUT THE AP PARTS CORP. — This long-time customer, with plants in Toledo, Ohio, Grand Haven, Michigan, and Culver City, California, is the world's largest manufacturer of mufflers and exhaust and tail pipes in the automotive replacement field. AP subsidiaries also supply these components to car factories for original equipment.

SOMETHING ABOUT "PIPES" — "Pipes" are everyday automotive necessities . . . an indispensable part of the exhaust system which insures efficient engine performance and motoring safety and pleasure. Thanks to the engineering, production and marketing skills of progressive manufacturers like The AP Parts Corp., "pipes are on tap" at moderate cost at car service centers everywhere.

"Pipes" are actually lengths of electrically welded steel tubing . . . specially sized and bent into complicated shapes to fit cramped clearances between body and frame of individual car makes and models. AP makes over 1,000 different pipes for the cars on the road today . . . plug or ring gauged to five-thousandths tolerance.

THE RECORD — Deliveries: initial shipments, January 1954; beginning March 1954, monthly without interruption. Cumulative weight: thousands of tons. Rejections during these 4½ years: a single coil in 1955; one in 1956 . . . Here are the job performance scores year by year:

1954	100.000%	1956	99.828%
1955	99.801%	1957	100.000%

1958 (latest report to 7/1) 100.000%

PART PLAYED BY DSC STEEL — DSC AccuRolled CR SHEET COILS provide the essential combination of uniform gauge and temper and consistent weldability for non-stop roll-forming, welding and shaping operations . . . as in "Pipe" fabrication. Add manufacturing savvy like AP's and the stage is set for high-scoring job-performance and low unit production costs . . . another example of customer-supplier teamwork "on the job."

Like to know how we do our part—whatever the DSC product may be? Just write to our G.S.O. or call a DSC Customer "Rep" . . . soon?

Customer Satisfaction Is Our Business

DSC MILLS AND PRODUCTS

PORTSMOUTH DIVISION, PORTSMOUTH, O.
Coke • Coal Chemicals • Pig Iron
Basic OH Steel Ingots • Blooms • Slabs • Billets • Rods
Hot Rolled and Cold Rolled Sheets • Low and Medium Carbon
Manufacturers' Wire • High Carbon Specialty Wire • Aluminum Cable Strand
Reinforcement • Rope Wire • Tire Bead Wire • Welded Wire Fabric

MILL DIVISION: DETROIT, MICH., HAMDEN, CONN.
Cold Rolled Carbon Steel Strip
Flat Cold Rolled Carbon Spring Steel

35TH ANNIVERSARY YEAR DSC

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DETROIT STEEL CORPORATION

GENERAL SALES OFFICE, DETROIT 9, MICHIGAN

CUSTOMER "REP" OFFICES:
Charlotte, N. C., Chicago, Cincinnati, Cleveland, Columbus, Ohio., Dayton, Ohio., Detroit, Grand Rapids, Mich., Hamden (New Haven), Conn., Indianapolis, Jackson, Mich., Louisville, Ky., Milwaukee, Wis., New York, St. Louis, Toledo, Worcester, Mass., Winneconne, Wis.

ACHESON

dispersions digest

Reporting uses for

dag® BRAND DISPERSIONS

COLLOIDAL GRAPHITE, MOLY-SULFIDE, VERMICULITE, AND OTHER SOLIDS

SUPERIOR CASTINGS, LONGER DIE LIFE ATTRIBUTED TO 'DAG' DISPERSIONS

Die casters and molders are expressing a growing preference for Acheson 'dag' brand colloidal dispersions. The consistent high quality of these products and the multiple benefits they offer have obsoleted most other mold cavity coatings. As outlined below, Acheson dispersions greatly aid in the manufacture of more uniformly sound castings having smoother surface finishes, facilitate metal flow and parting, and consequently extend the effective service lives of the dies and molds on which they are used.

Acheson 'Prodag'®, spray-applied on permanent molds at Paragon Aluminum Corporation, has given them consistently higher quality castings and fewer rejects.

Better surface finish with 'Prodag' permanent mold coating is just one of the reasons why Paragon Aluminum Corporation, a Division of Detroit Harvester Company located at Monroe, Michigan, switched to this Acheson product. After four years of experimentation with other mold washes, Paragon chose 'Prodag' — Acheson semi-colloidal graphite in water — and has used it constantly the past seven years. The reasons for its choice are these; uniform consistency, excellent heat-transfer quality, and its hard, smooth, tenacious film which resists flaking and provides easier parting characteristics.

With about 95 per cent of its annual output of more than two million pounds of castings going to the automotive industry, Paragon must insist upon quality. 'Prodag' helps to maintain this standard. These parts for convertible automobile tops are precision-molded from both 355 and 319 aluminum alloy. Molds are preheated before each day's run to 600°F and the casting cycle maintains this temperature. The 'Prodag' dilution ratio is 1 to 4 parts water and is applied to the molds with a commercial spray gun. Aside from occasional touchup at points of greatest wear, this coating lasts through the entire run. Because of the physical contours involved in these comparatively small, light castings, they require rapid cooling in certain areas to insure uniform strength. The 'Prodag' coating — with its proven fast heat transfer ability — allows the castings to cool without breaks or pinholes. And by parting more easily, the high-finish castings which result have given Paragon Aluminum products wide acceptance in this demanding industry.

Typical parts cast at Paragon Aluminum include these automobile convertible top braces. More uniform strength, better finish, and fewer rejects result from this company's use of Acheson 'Prodag'.

Colloidal graphite increases die life because of its stability at high temperatures, excellent lubricating qualities, and its ability to prevent adhesion and the scrubbing effect of hot metal. This cannot be said of conventional petroleum compounds which either decompose rapidly at temperatures above 300°F or do not possess the required lubricity necessary under good die casting procedures. It will not volatilize when in contact with the hot metal and cause pock marks due to gas formation. It will perform when present in extremely thin films which will not affect dimensions or cause discoloration of the parts being cast. And since it does not volatilize or otherwise be destroyed in the casting process, it does not need to be applied as often as other lubricants. This fact alone has often increased production as much as 25%. Investigate the use of an Acheson colloidal dispersion in solving your die casting problem . . . *It probably is the very answer you need.*

If you have a metal casting problem, call in your Acheson Service Engineer. Or if you prefer, write direct for additional information contained in our Bulletin No. 425. Address Dept. 1A-98.

'dag' and 'Prodag' are trademarks registered in the U.S. Patent Office by Acheson Industries, Inc.

ACHESON *Colloids Company*

PORT HURON, MICHIGAN

A division of Acheson Industries, Inc.

Also Acheson Industries (Europe) Ltd. and affiliates, London, England

50th

Offices in: Boston • Chicago • Cleveland • Dayton • Detroit • Los Angeles • Milwaukee New York • Philadelphia • Pittsburgh • Rochester • St. Louis • Toronto

FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Induction Heating

A folder describes a 400-cycle induction heating generator. It tells how the unit simplifies preheating and stress relieving of arc welded joints. (Hobart Brothers Co.)

For free copy circle No. 21 on postcard

Belt Conveyors

Horizontal and inclined belt conveyors are covered in a catalog. (E. W. Buschman Co.)

For free copy circle No. 22 on postcard

Perforated Metal

A 156-page general catalog contains over 30 pages on how to use perforated metals. (Harrington & King Perforating Co., Inc.)

For free copy circle No. 23 on postcard

O_2 Analyzer

A new oxygen trace analyzer is a dual range instrument. It continuously measures gas samples for minute quantities of oxygen, as low as 0 to 5 parts per million. A bulletin describes it. (Buchman/Process Instruments Div.)

For free copy circle No. 24 on postcard

Vacuum Lifts

Vacuum lifts for automatic production line operations are featured in a brochure. It identifies various standard or special lifts. (Union Tool Corp.)

For free copy circle No. 25 on postcard

Control Valves

Hydraulic directional control valves outlined in a catalog have nominal ratings of 12 gpm. They're for use on earth-moving, materials handling and other mobile equipment. (Parker-Hannifin Corp.)

For free copy circle No. 26 on postcard

Ultrasonic Cleaner

Low-cost production size ultrasonic cleaners are announced in a data sheet. It details a 200-w output model and related transducers. (Narda Ultrasonics Corp.)

For free copy circle No. 27 on postcard

Micro Switches

A 32-page basic switch catalog mentions a new high-precision roller lever switch. This has extreme stability. It introduces other new products, too, in its list of 200 some switches and related devices. (Micro Switch Div., Minneapolis - Honeywell Regulator Co.)

For free copy circle No. 28 on postcard

Separators

Automatic moisture separators appear in a new catalog. Also included: lubricators, regulators, filters and filterators for compressed air systems, and products filtering oil, oil fumes and solid contaminants. (Wilkerson Corp.)

For free copy circle No. 29 on postcard

Industrial Floors

Corrosion-proof floors for industry are presented in a bulletin. These engineered floors meet exacting customer requirement. Types of construction and an estimating table are included in the bulletin. (Atlas Mineral Products Co.)

For free copy circle No. 30 on postcard

Diecastings

Hints for designing diecastings are contained in a 12-page folder. Also covered: making diecastings, possible cost-cutting ideas, and diecastings pictures. (The Hoover Co.)

For free copy circle No. 31 on postcard

Solid Lubricant

A new bulletin describes a solid film lubricant. Containing molybdenum disulfide and a bonding

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. **9/11/58**

Circle numbers for Free Technical Literature or Information on New Equipment:

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41	42	43	44	45	46	47	48	49	50
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NEW YORK 14, N. Y.

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FREE LITERATURE

agent, this material applies easily, wears well, it states. (Hohman Plating & Mfg. Co.)

For free copy circle No. 32 on postcard

Special castings

Special castings to your specifications can be supplied by a foundry described in a 6-page folder. It shows electric furnace alloy and carbon steel castings. Also available from the firm are: wheels, rollers, idlers, wire rope fittings, sheaves, conveying equipment, gears, pinions, bar benders and cutters. (Farrell-Cheek Steel Co.)

For free copy circle No. 33 on postcard

Cobalt

Two new instruction sheets cover metallographic etching reagents for cobalt and its alloys and electrolytic polishing of cobalt. (Battelle Memorial Institute.)

For free copy circle No. 34 on postcard

Motor Generator

Graphically describing vertical, water cooled, inductor type motor-generator sets is a new bulletin. Sets handle induction heating and melting jobs. (Safety Industries, Inc.)

For free copy circle No. 35 on postcard

Vacuum Crucibles

A bulletin describes copper crucibles. These are fabricated, machined and vacuum tested to customer specifications. (Zak Machine Works, Inc.)

For free copy circle No. 36 on postcard

Pneumatic Drills

Nine type of pneumatic drills are shown in a catalog sheet. These include lightweight, high speed and heavy duty units. (Air Speed Tool Co.)

For free copy circle No. 37 on postcard

Titanium Fittings

Forged titanium fittings are outlined in a brochure. These fittings handle high pressure, high temperature applications. They weigh 44 pct less than comparable strength stainless fittings, it states. (Harvey Aluminum).

For free copy circle No. 38 on postcard

Drill Grinder

Special point drills are ground by a new relief grinding fixture. Grinding of ⅜-in. drills at 120 per hour is possible with it. It also sharpens core drills, stepdrills, countersinks and taps. All this on any regular surface or tool grinder, literature says. (Steptool Corp.)

For free copy circle No. 39 on postcard

Multiple Machine

A machine that performs horizontal milling, drilling and boring is featured in a 6-page folder. This 10 ft 7 in. long machine is 4 ft 8 in. deep and 7 ft 2 in. high. The bulletin gives other specifications, drive data and accessories. (Portage Machine Co.)

For free copy circle No. 40 on postcard

Walkie Trucks

A buying guide covers walkie-type materials handling trucks. It lists some 30 items a buyer should check when shopping for such trucks, whether they're made by this manufacturer or not. (Lewis-Shepard Products, Inc.)

For free copy circle No. 41 on postcard

Cleaner

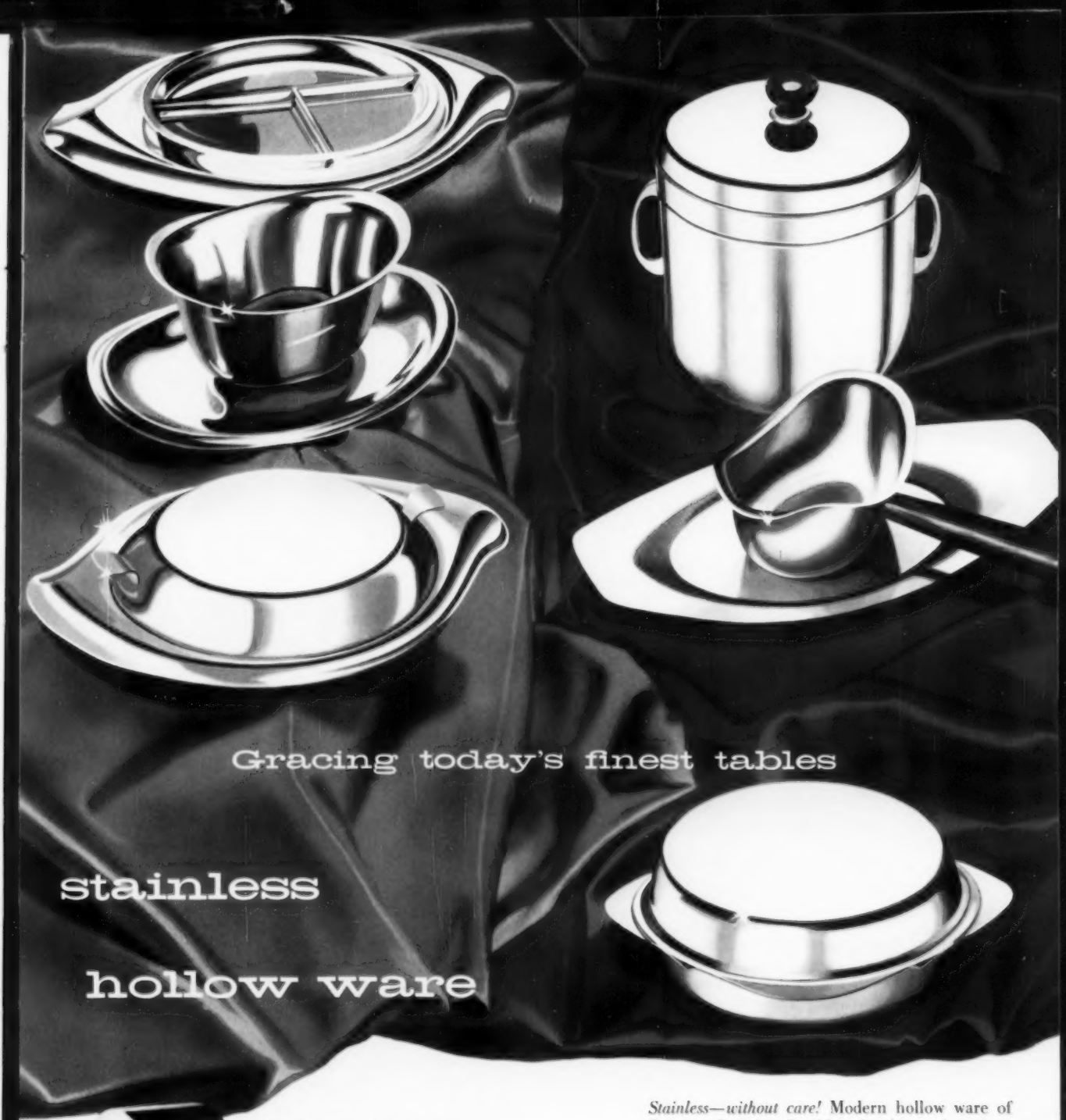
Development of a new material for simultaneously cleaning and light phosphating of iron, steel or zinc in three simple stages is described in new literature. Products is called Turcoat 4185. (Turco Products, Inc.)

For free copy circle No. 42 on postcard

Steel Punches

High speed steel punches in four types, all Rc 61-63, are shown with standard dimensions in new booklet. It also lists headless die and stripper guide bushings. (Hudson Mfg. Corp.)

For free copy circle No. 43 on postcard



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Superior

STAINLESS STRIP STEELS

MARK II design
by INTERNATIONAL Silver Company
Meriden, Connecticut

STRATA design
by SHEFFIELD Silver Company
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Stainless—without care! Modern hollow ware of Superior Stainless Steel has the sheen of precious metal without penalty of upkeep . . . strength to resist dents and scratches in service . . . and "willingness" in fabrication that permits free range in design and manufacturing methods. For full details on Superior Stainless grades, sizes and tempers fitting your applications, address our Sales Department.

Superior Steel

DIVISION OF

COPPERWELD STEEL COMPANY

CARNEGIE, PENNSYLVANIA

For Export: Copperweld Steel International Company, New York

Reduces Pipe Handling Time by 83%

Savings Pay for Tramrail System in One Year

The Tramrail transfer crane travels in the middle bay and connects as desired with the spur tracks over the side bays, thus enables the hoist carrier reaching every part of the room. Incoming pipe is lifted from railroad cars with a Cleveland Tramrail hoist carrier operating on a track serving the floor above and lowered through the hatchway at one end of this warehouse.

Outgoing pipe is brought directly from storage to trucks. The hoist and entire system is rated at one ton.

SEVERAL hundred tons of 1/8 to 16 inch diameter pipe are received at the Pipe Warehouse of Palmer Supply Co., Seattle, Washington, per month. To handle this by hand was such a loathsome chore that it was difficult to keep men at this work, and the labor turnover was large.

The installation of a Cleveland Tramrail track and transfer crane system took over the fatiguing job of lifting, as well as hauling, of the pipe into and out of the warehouse. It made possible the handling of large, heavy bundles per trip in less time than required for one or a very few pipes by manual handling. It thereby reduced the man-hours required for pipe handling to approximately one-sixth. Resulting dollar savings paid for the system in one year.

Cleveland Tramrail equipment offers you so much and pays off in so many ways for such a long time that we urge you to study its possibilities in your plant.

GET THIS BOOK!
BOOKLET No. 2008. Packed with valuable information. Profusely illustrated. Write for free copy

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
4807 East 290th Street, Wickliffe, Ohio

CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

ALCO CASE HISTORY: WARNER & SWASEY

With ALCO's *Hi-Qua-Led Steel forgings, Warner & Swasey reduced time for straddle-mill dovetailing of tool holder's pentagon shape by 71%.*

MACHINE TIME CUT 33%, TOOL LIFE TRIPLED WITH ALCO'S HI-QUA-LED® STEEL FORGINGS

With open-die forgings of ALCO's special free-machining Hi-Qua-Led Steel, Warner & Swasey has reduced machining time 33% on a pentagon-bar tool holder for their automatic chucking machine. Time for the various milling operations has been reduced as much as 71%, and turning time 33%.

Warner & Swasey has found that in every operation the use of Hi-Qua-Led forgings has meant savings in tool life, machining time or both. In the trepanning operation, run at the same speed as before, the life of expensive tools has increased up to three times.

ALCO's Hi-Qua-Led Steel forgings have unique advantages of machinability, while maintaining the physical characteristics of regular forgings of the same grade. Cost is just a few cents more. Circular shapes, forged and rolled, range from 18 to 145 in. OD; open-die shapes from 1000 to 30,000 lbs and up to 40 ft long; mandrelled ring forgings up to 60 in. wide.

Contact your nearest ALCO sales office for full information on the many advantages of Hi-Qua-Led Steel forgings, or write ALCO Products, Department 154, Schenectady, New York.

ALCO

ALCO PRODUCTS, INC.

NEW YORK

SALES OFFICES IN PRINCIPAL CITIES

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SPECTROCHEMICAL LABORATORIES, INC.
P. O. Box 8781, Pittsburgh 21, Pa.

You Arbitrate It!

A SNOW JOB

From the files of the American Arbitration Assn.

▪ Not long ago, a sudden March snowstorm hit Ohio. Snow piled up so deep on roads that only half the day shift showed up at one machine tool plant.

Power lines weren't affected, though. Since there was plenty of work on hand, employees went to their jobs. After two hours, by 10 o'clock in the morning, the weather got worse.

Whistle Blows Early—Management, afraid workers would have a hard time getting home, shut down early. It told the men they'd get paid for the two hours of work.

Later, the union asked that four hours call-in pay be given. As the basis for its demand, it presented this contract clause:

"An employee who reports for work on his regular shift without previously having been notified not to report shall be given four (4) hours work or four (4) hours pay at his average straight time hourly rate of pay, except for conditions beyond the control of the Company and Acts of God."

Goes To Arbitration — Taking the case to arbitration, the personnel manager argued the plant was closed for the employees' convenience. The company, he felt, shouldn't have to pay a penalty rate for it.

"The storm," he stated, "was an Act of God within the meaning of the contract." To this, the union replied that the Act of God proviso related only to notification of employees not to come in.

How would you rule?

The Arbitrator Ruled:

The call-in provision was contracted, he said, to protect employees from cost and inconvenience of reporting when work was unavailable. He conceded the company action was laudable and in the best interests of employees. But as long as work was available the men should have been given the choice

(Continued on following page)

NEW FILMS

"More Than Just Steel" deals with special-purpose sheet. Past and present steels and uses appear. 30-min. 16mm color, sound. Product Information Service, Armco Steel Corp., Middletown, Ohio.

"Automating Electrically" pictures, among other things, a punch-card-run milling machine. It tells how new electrical advances can automate just about any process or tool. 30min color, sound. General Electric Co., Schenectady 5, N. Y.

"Pre-Delivery Testing Holt Uni-Built Baling Presses at the Factory" shows presses that squash a whole auto into a neat bale. 8min. 16mm color, sound. Chattanooga Welding & Machine Co., Chestnut St., Chattanooga 2, Tenn.

"A Challenge For Steel" asks and answers questions like: Where can pre-finishing be done cheaper—at the mill or a fabricating plant? Can a mill profit by strip-grinding carbon steel and selling it as polished stock? It features coated abrasives. Minnesota Mining & Mfg. Co., Dept. F7-287, 900 Bush St., St. Paul 6, Minn.

"Aluminum Welding; Different, Not Difficult" has 28-page technical brochures to reinforce it. 33min. 16mm color, sound. Reynolds Metals Co., Advertising Distribution Center, Richmond 18, Va.

The Arbitrator Ruled:

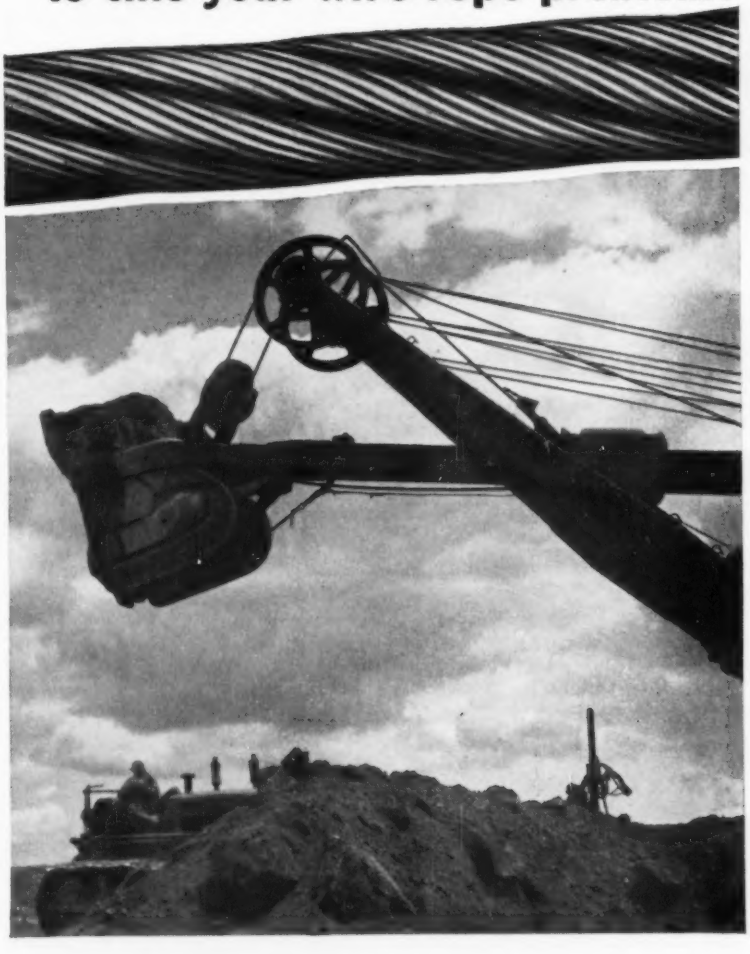
(Continued from preceding page)

of working four hours or going home early. In that case, those who left at 10 o'clock would not have been entitled to four hours pay. Since it was mandatory for employees to quit work early, they were entitled to call-in pay.

Caution: The award in this case is not necessarily an indication of how arbitrators might rule in apparently similar disputes. Each case is decided on the basis of the particular history, contract, testimony and other facts involved. Some of these essential details may have been omitted in condensing the original arbitration for brief presentation.

bending fatigue...

is this your wire rope problem?



FREE Red-Strand Service Bulletin No. 105 brings you the answer you're after!

Do broken wires start showing up much too soon after you put a new wire rope into use? If so, costly bending fatigue is probably the explanation. Fortunately much of the expense it causes can be eliminated by following the simple procedures explained in Red-Strand Wire Rope Service Bulletin No. 105. This is one of a series devised to help wire rope users get better service without spending more money. Copies are sent on request. Write H. K. Porter Company, Inc.—Leschen Wire Rope Division, St. Louis 12, Mo.

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WIRE ROPE

H. K. PORTER COMPANY, INC.
LESCHEN WIRE ROPE DIVISION

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SIMONDS has over 60 years' experience in cutting quality industrial gears. We can supply any type of gear in cast or forged steel, gray iron, bronze, Meehanite, rawhide or bakelite in a full range of sizes adaptable to the material. Also heat-treated, case or flame hardened gears of carbon or alloy steel. Send us your requirements for quotation.

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GEAR CUTTING

SIMONDS' facilities can produce any type of custom gear from your blanks if you prefer. Same quality . . . same prompt service.

QUALITY GEARS FOR OVER 65 YEARS

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Also stock carrying distributors of Ramsey Silent Chain Drives and Couplings; and industrial V-belts.

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LIBERTY at 25TH PITTSBURGH 22, PA.

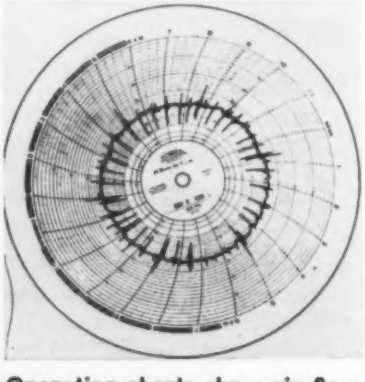
Controls Increase Quality, Output

Modern control systems can pay off in quality and quantity, too. One steelmaker finds that its new blast furnace controls save both time and money.

Despite frequent changes in furnace burden, these controls maintain a steady flow.

▪ Pneumatic blower controls increase production and improve performance of one of its blast furnaces, reports Alan Wood Steel Co., Conshohocken, Pa. These controls, installed by Hagan Chemicals & Controls, Inc., Pittsburgh, maintain steady flow to the furnace. This is despite frequent changes in furnace burden.

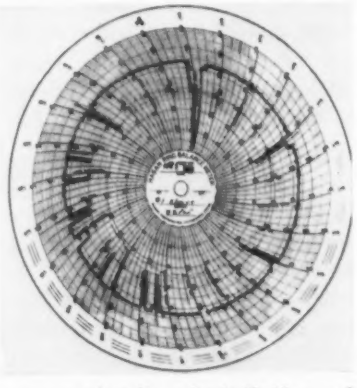
The furnace blower has been operating since 1918. Yet, the controls were installed easily without extensive design changes or delays.



Operating charts show air flow to the furnace before . . .

The new control panel has two stations. One is the normal flow set point; another is the blast furnace checking set point. A manual control provides for positioning the steam valve by hand.

A ring balance meter senses flow to the inlet venturi. It then transmits a signal proportional to flow. The signal compensates for pressure and temperature variations. This signal is matched to the set point signal in a ratio totalizer which is the controller. Its control signal operates a double diaphragm steam valve positioner mounted on the turbine governor.



. . . and after installation of pneumatic blower controls.

As Alternate Panel—Alan Wood Steel also installed an alternate Hagan control panel in the cast house for the blast furnace. This duplicates the blower room panel. It contains all necessary instruments for adjusting and monitoring blower output.

The cast house operator thus

Want More Data?

You may secure additional information on any item briefed in this section by using the reply card on page 187. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

can make wind changes immediately. He needn't experience delays caused in the past by signalling between cast house and blower room.

Operating charts indicate blast furnace operation is smoother with these controls. Holding the blast flow constant has helped straighten out furnace operation. Time and money savings result.

Metal Removal

Engineers improvise, use torch to dismantle, move building

On-the-job necessity has led to adoption of a new tool by George P. Dysart, Inc., steel erection firm of Columbus, O. The Arcair torch, originally developed for production metal removal and maintenance jobs, recently proved valuable in dismantling a 50-in. Worthington crusher for relocation.

The 5-story-high crusher stood at the plant of Columbia - Southern Chemical Corp., Fultonham, O., for 40 years. Dysart was called in recently to move it to a new location.

Four stories above ground, however, dismantling operations hit a snag. The firm discovered the crusher bowl—more than 30-ft diam and lined with heavy manganese plates measuring approximately 28 x 24 x 6 in. thick—had been fabricated to last.

Can't Move It?—Several hundred manganese plates had been grouted in place with zinc. Efforts to loosen them were unsuccessful. Arc cutting electrodes then were tried. They succeeded only in melting the metal, leaving it almost intact.

At this point, a representative of Lincoln Electric Co., maker of the arc welding machine used in the first attempt, suggested Arcair. The Arcair torch uses melt power of an electric arc with a compressed air jet.

It literally blasts molten metal out of the way. On the crusher job, a general purpose torch with ⅜-in. copper clad electrodes was selected. Power was a 400-amp Lincoln

Oval steel strapping holds this huge load of lumber even in this stress position. This dealer finds A. J. Gerrard's Oval steel strapping cuts strapping costs 50%.

Stahlman Lumber Company——

Cuts strapping costs 50%... time by over 12,000 hours!

"Costs less than half the price of other strapping materials. We started using A. J. Gerrard *Oval* steel strapping about two years ago, and have found that because of the much greater lineal feet per pound yield of Oval strapping, we get 50% *more* footage for approximately the same price as any other strapping material", reports W. J. McClain of Stahlman Lumber Co., Houston, Texas.

"Easier to use too! Our A. J. Gerrard strapping tool quickly tensions, twists and cuts the strapping in one fast operation. It's not only faster, but we've also found that we're saving two to three feet of strapping per package because of less waste."

"And the manpower we've saved! For example, because we now use modern strapping and handling techniques, an operation that used to take 4½ man-hours is now a 10-minute job. We figure we're saving about 12,480 man-hours per year."

Worth investigating. Clip the coupon below to your letterhead. Find out how *you* can use Oval steel strapping in your operations . . . how you can cut your strapping costs in half.

Using an A. J. Gerrard Oval steel strapping machine this operator can tension, twist and cut the strapping in one fast operation.

FREE NEW CATALOG

Clip this to your letterhead

A.J. GERRARD AND COMPANY

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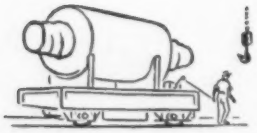
☐ SEND DETAIL INFORMATION ON OVAL STEEL STRAPPING.

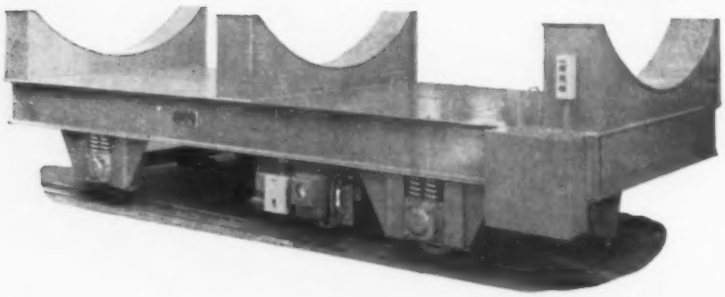
☐ I'M INTERESTED IN A COMPLETE STRAPPING SURVEY OF MY OPERATION.

Links up your HANDLING NETWORK



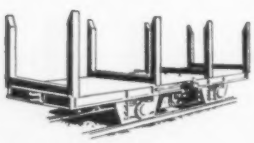
for added efficiency . . .

extra economy

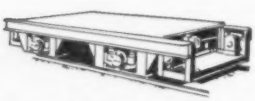


ATLAS WALK-ALONG

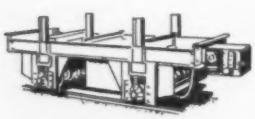
SAFETY-TYPE TRANSFERS



Special bed designs to cradle your load.



Single platform or double platform-operator rides.



Versatile power . . . diesel or gas electric, storage battery, or cable reel. Also remote control with no trailing cable.

If you're responsible for maintaining safe, low cost movement of heavy loads (5 to 200 tons) and intermediate transfer of these loads during process or storage, Atlas can help you by engineering a transfer car to meet your exact load and power requirements.

Atlas engineering gives you every modern safety feature for personnel protection.

. . . choice of power and control including:

1. Single lever (walk-along) forward, reverse with safety stop when lever is released.
2. Storage battery power with built-in charger.

For Cost-Saving Details Request "Walk Along" Bulletin 1286

THE ATLAS CAR & MFG. CO.

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ENGINEERS & MANUFACTURERS SINCE 1896

welder. Compressed air came from a Jaeger "Air Plus" 105-cfm portable field compressor.

Operators became quickly adept in handling the new tool. Zinc securing the manganese plates soon was cut and gouged out.

Handling

New packing method cuts rod damage

Thanks to a new packaging method, a shipper of steel rods cuts handling time, reduces damages once experienced in handling and shipment, and improves storage.

Developed by engineers at Spang-Chalfant Div., National Supply Co., Ambridge, Pa., the method involves the tieing of 25 and 30-ft long rods. These aren't ordinary ones; they're precision made suckers rods. They couple together in strings hundreds of feet long in oil wells operating pumps bringing oil to the surface.

Must Keep Precision — Sucker rods come in special steels, of various grades, to rigid specifications. It's important to maintain their qualities after manufacture. Straightness and threads on both ends especially require protection during handling.

Sucker rods are ⅝ to 1-in. diam. They have upset ends of somewhat larger cross-section for the threaded joint and for a square section on which a wrench is used.

Simplicity and compactness are two principal packing requirements needed to assure delivery in top condition. Both these are met by an open packaging arrangement using low-cost, expendable components. It holds rods apart like eggs in a crate.

Two Main Parts—Using just two main elements, the rod shippers make a package containing 40, 60, or 80 rods (depending on diameter). This may weigh up to two tons. The first element includes 28½-in. oxiline treated seasoned wood

separator blocks (1⅝ x 1⅝ in.) with 15 or 20 grooves across both of the long sides.

Top and bottom blocks are 2 x 4's grooved on one side. The second main element, steel straps, encircle the package. Four layers of rods are held between five separator

Careful packaging keeps these rods from damage en route.

blocks positioned with screw type nails. Five or six of these sets of separator blocks are used in this manner with a spacing of 66½ in. along the rods. Staggering upset ends of the rods assures compactness.

Fastenings

Lock inserts halt damage in roller leveler

Stainless steel self-locking wire thread inserts help a manufacturer solve its fastening problems. And the inserts improve product design of the firm's high-speed roller leveler. This handles a wide range of metalworking jobs.

Built in many sizes by Voss Engineering Co., Pittsburgh, the leveler flattens cold and hot rolled sheet strip and plate, ferrous and nonferrous metals as well as perforated sheet and stamped parts. The largest leveler flattens 108-in. wide sheets, 0.063 to 0.500-in. thick at 282-fpm speeds. The smallest leveler takes 12-in. wide sheet or strip, 0.010 to 0.050-in. thick at 400 fpm.

Has Two Main Parts—The leveler has two main parts: a top frame

fostoria radiant heating news

to help manufacturers improve production operations

Get these 5 answers before you buy infrared ovens today...

While *infrared* provides the fastest, lowest-cost and most easily controlled of all production heating methods, there are a number of factors you want to consider thoughtfully when buying radiant ovens. Getting answers to these five pertinent questions beforehand will guarantee results that give you the satisfaction — and profit — you want.

Q Have you chosen the right type of infrared heat?

Just as gas, electricity and oil offer a choice of fuel in convection ovens, various types of infrared heat sources are available for radiant type ovens. Clear lamps . . . quartz lamps, quartz tubes . . . metal rods . . . all have distinct advantages depending on application, heat rating desired, processing speed and often, cost.

One is right for *your* purpose. The advantage of dealing with a supplier experienced in *all* types is obvious. Fostoria has the advantage that comes from being the pioneer in manufacturing radiant equipment, with skill and know-how to help you choose the right type of infrared.

Q Is your supplier unbiased in his recommendations?

Your experience in purchasing any kind of equipment tells you that getting a truly unbiased opinion from a company making only *one of many types*, is rather unlikely. So it is with manufacturers in the infrared field. Many concentrate on one type of radiant oven.

Today, Fostoria is the one firm making equipment that accommodates *all* acceptable sources of radiant heat. No heat sources are made at Fostoria. Consequently, no axe to grind.

Q Will your oven be engineered for your job?

Like a carpenter who attempts to build a boat, even an ordinary sheet metalsmith can build an infrared oven. But one thing is sure, neither boat nor oven will be the fine piece of equipment that gives the satisfaction you want.

Designing and constructing an efficient, economical infrared oven involves (1) selecting the proper heat source, (2) determining correct oven shape, (3) laying out proper interior, (4) applying the right amount of heat, (5) providing suitable controls and accessories. To get the highest efficiency possible at minimum operating costs, all of these factors are considered before Fostoria engineers design the radiant oven best for your needs.

Q Is your supplier soundly established?

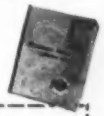
Let's face it, all of us have more confidence in the recommendations of a doctor whose shingle is aged with practice —and a bank with substantial assets. So it is similarly reassuring to know you are buying an infrared oven from a company with integrity. One who can, and does, stand back of your purchase 100%.

Supplying infrared ovens to thousands of users over the past 20 years, Fostoria is the kind of financially sound, and highly rated corporation you will find it rewarding to deal with.

Q Can you get service after the sale, too?

Whether buying a machine tool, lift truck or radiant oven, often the *service* you will get is quite as important to consider as the purchase itself. Fostoria established a nationwide network of trained engineers to give top-notch service *before and after the sale*. That means proper installation — and continuous performance with economy.

Send for a free copy of "Radiant Heat—Applications Unlimited"—our 20-page illustrated booklet on infrared ovens. If you include data on your applications we will gladly include recommendations in our reply. Write to Department 924



Infrared has many uses in Production Heating today

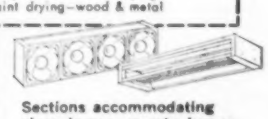
Save Money—Save Time—Save Space

Dry adhesives	Railroad car thawing
Plastics processing	Porcelain drying
Thermal degreasing	Fusing
Food processing	Soldering
Ink drying	Finishing leather
Preheating operations	Shoe drying

Paint drying—wood & metal

THE FOSTORIA PRESSED STEEL CORP.
FOSTORIA, OHIO

Largest manufacturer of completely engineered infrared ovens and components in U. S. A.



Sections accommodating clear lamps, quartz lamps, quartz tubes or metal rods

and a bottom frame. These carry work rolls and all major leveling mechanisms.

Long and slender, the work rolls are supported by a backup roller mechanism. This flattens material passing between them.

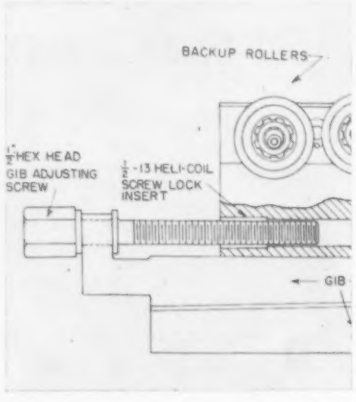
Each backup support has a gib and a ½-in. hex head adjusting screw.

Might Cause Damage—Since the leveler is subject to high-speed vibration, these screws could possibly vibrate loose. Then they might fall into the leveling rolls.

It's necessary to lock the screws in place to prevent their working loose. Space considerations preclude use of most normal locking methods.

Solves The Problem—To combat vibration and loosening, engineers use a ½ in.-13 stainless steel wire thread insert. This has a locking feature which eliminates supplementary locking devices. Another advantage to using an insert is this: The hole in which the screw turns needn't be tapped full depth.

Manufactured by Heli-Coil Corp., Danbury, Conn., the screw-lock inserts are of 18-8 (AMS 7245B) stainless steel wire. They have an ultimate strength of about 200,000 psi.



Drawing shows how screw lock insert prevents vibration.

Miniaturization

Nominations for the 1958 Miniaturization Award are now being accepted. Established in 1957 by Miniature Precision Bearings, Inc., Keene, N. H., the award recognizes outstanding contributions by an individual or firm to the concept of miniaturization.

Entries can be submitted to the Awards Committee, Box 604, Precision Park, Keene, N. H.

Laminates

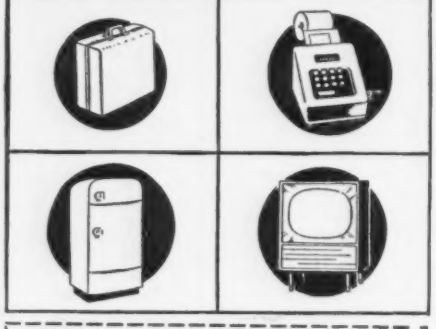
To fabricate rod-shaped parts from laminated plastic it seems logical to begin with rod stock. Actually, it can be more economical to use laminated sheet.

Eastern Specialty Co., Philadelphia, finds this true of television tuner shafts. Fabricating from sheet instead of rod saves 90 pct in raw material costs alone. Lower fabricating costs bring further savings.

The firm saves still more on

NOW . . . A NEW FINISH

colorful, practical vinyl plastic for lamination to metal



- *Can be permanently laminated to metal . . . flat sheets or continuous coil.*
- *Can be crimped, shaped, bent or drilled without damage to textured finish.*
- *Won't chip, peel or fade.*
- *Resists abrasion.*
- *Easy to keep clean with soap and water.*
- *No special machinery required. Forming or stamping can be done on present equipment.*
- *Unlimited color and design selections.*

A new and more functional finish for greater sales appeal. That's Masland Duran Clad, bringing the texture, warmth and color versatility of practical vinyl to countless products. Find out how your product can have this modern money-saving finish. Write for free folder.

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Valley ingot moulds are designed for individual steel plant conditions. These moulds meet today's metallurgical requirements

VALLEY MOULD AND IRON CORPORATION

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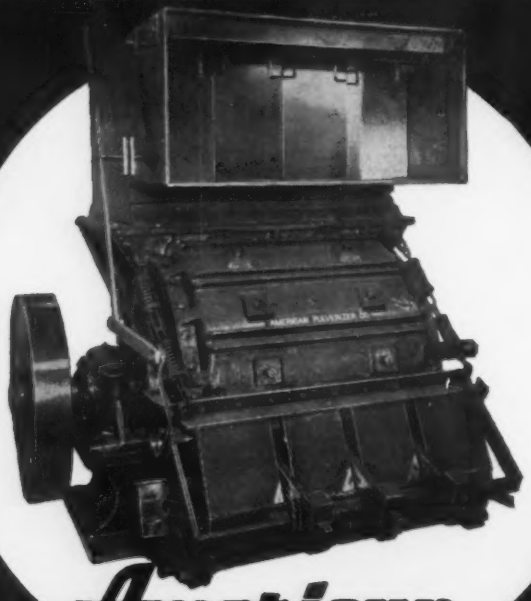
CASH IN YOUR CHIPS

Change Metal Turnings Waste into More Profitable Shoveling CHIPS



American METAL TURNINGS CRUSHERS

No progressive, profit-conscious company—who produces 10 or more tons of metal turnings per month—can afford to ignore the profit potential of a modern chip salvage system . . . with an American Metal Turnings Crusher at the core.

American installation profits include: $4 more per ton for chips than for machine turnings; up to 50 gallons per ton in cutting oil recovery; 75% less storage; easier, faster handling.

How many profit dollars are you losing under present operations? If, for example, you're currently producing 20 tons of turnings a month . . .

THIS COULD BE YOUR PROFIT STORY FOR NEXT YEAR!

240 Tons Metal Turnings per Year (20 tons/month at $4 extra per ton)	$ 960.00
6,000 Gallons Recovered Cutting Oil at 30¢/Gal. (50 gals. per ton x 240 tons = 12,000 gals. Half of this, 6,000 gals., can be credited to use of chips instead of turnings in reclamation)	$1,800.00
Estimated Savings in Manpower, Storage, Tools, Maintenance, Freight, etc.	$ 300.00
TOTAL GROSS PROFIT	$3,060.00

WRITE for Metal Turnings Crusher Bulletin.

American POLVERIZER COMPANY

1439 MACKLIND AVE. • ST. LOUIS 10, MO.

material costs, thanks to Taylor Fibre Co., Norristown, Pa. This supplier of shafts, recommended a cost-cutting paper base, phenolic laminate instead of the fabric- base laminate previously specified. Shaft quality is improved, too.

Fabrication

Metal tank netting cuts maintenance

Monel nickel-copper alloy insulation netting helps an alumina plant keep tank maintenance costs low. The netting holds tank insulation. In turn, it has a covering of tar-asphalt mix.

Protecting outdoor digester, washer and settling tanks, the alloy net is in use at Reynolds Metals Co., Corpus Christi, Tex. It helps

Inspector points out Monel net which protects this tank.

the tanks resist attack by salt air, industrial fumes and particularly the hot caustic solution which they contain. This sometimes seeps through or spills over to attack the metal.

What It Uses—Monel net is a 1-in. hex mesh, three-twist netting. It's fabricated from 0.028-in. Monel wire by Gilbert & Bennett Mfg. Co., Georgetown, Conn. It comes in 4 x 300-ft rolls.

The Monel net assures a strong, tight, lasting cover for the insulation. Long life means few re-insula-

tion jobs, reduction in frequency of erecting expensive scaffolding for repair operations, and generally results in low maintenance costs.

Handling

Improved automatic weighing ups ferrochrome quality

In large-scale production of low carbon ferrochrome, weighing and batching is almost a continuous process. Depending on the grade wanted, varying but exact amounts of chrome ore, high calcium pebbled lime and a metallic reducing agent to smelt the ore must be combined during milling and smelting. Certain properties of ingredients (abrasiveness, fineness and tendency to flush) can cause production problems.

At the Roane Electric Furnace plant of Tennessee Products & Chemical Corp., Rockwood, Tenn., production of mix for ferrochrome furnaces exceeds 25 tons an hour. The firm mixes the following grades of ferrochrome: chromium—67/72 pct; carbon—0.025, 0.05, 0.10, 0.20, 0.50, 1.00, 1.50, and 2.00 pct maximum.

Users' Appetite Grows—With recent increases in demand for this product by stainless steel makers and others, more efficient, more rapid production procedures became necessary. A primary need was a fool-proof weighing and handling system. For this, the firm called in Richardson Scale Co., Clifton, N. J.

There are two grinding mills; one is for mix "B"; the other, mix "A." From 10 large bins, the handling system selects, withdraws, weighs, and feeds varying amounts of ingredients to the mills. Material then feeds to the smelting furnace. The handling system effectively speeds weighing for grinding, weighing for smelting, and keeps over-all process control. It's accurate to less than one pct.

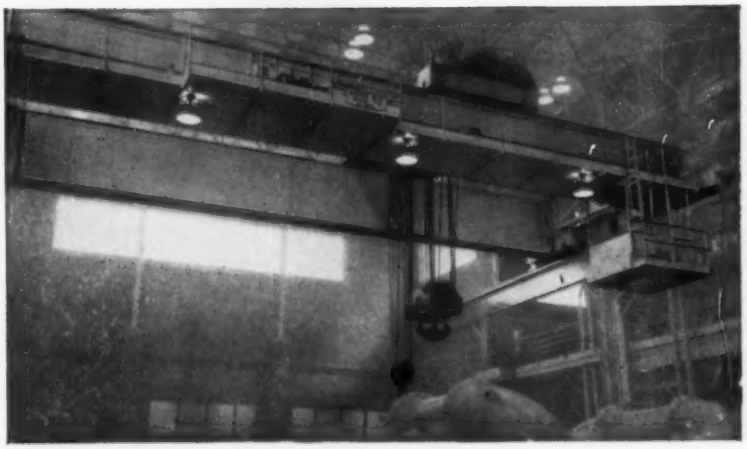
One operator directs, from a central control station, the complete processing from storage to furnace.

SHEPARD NILES

LARGE INDUSTRIAL CRANES

LIFTING POWER

1 to 450 TONS

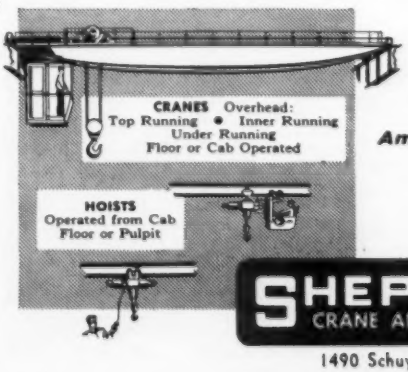


Shepard Niles places dependable lifting power at your fingertips . . . effortless power that now serves thousands of plants throughout America.

Eliminate costly ground-level handling of materials—going around men, materials and machines. Go UP and OVER, smoothly and safely through the air, directly to your destination . . . leaving **more room for production and storage.**

Shepard Niles offers you a **complete** line of heavy industrial cranes from 1 to 450 tons for constant or intermittent duty in slow, medium and high speeds; operated from cab or floor.

Send for Industrial Crane bulletin today . . . or ask that a Shepard Niles representative call at your plant—there's NO OBLIGATION.



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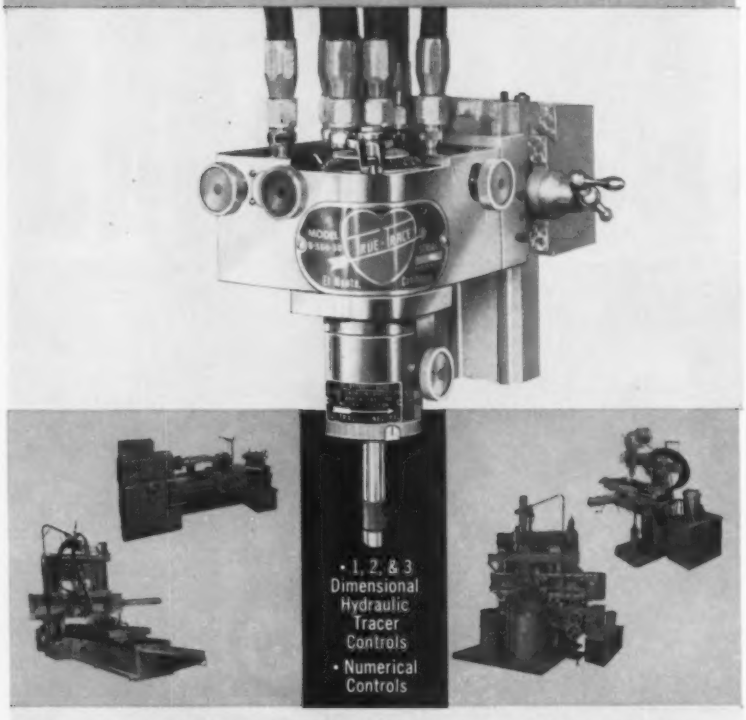
...WITH TRUE-TRACE CONTROLS!



Outmoded, manually-operated machines cost money, reduce production capacity and waste skilled labor. Modernize your existing machines with **True-Trace** machine tool controls—increase your ability to produce high quality parts economically.

Our factory representatives from coast to coast, and three factory sales,. engineering and service centers are ready to show you how to increase production on your contoured parts or straight line machining ... yet achieve close tolerances! Let us assist you with your contour machining problems.

Before specifying ordinary controls, check **all** the facts ... investigate ... get expert in-plant recommendations. See why **more** True-Trace controls are used as original equipment by **more** machine builders than all other controls combined. **Write for our new 24-page, illustrated bulletin SB-1—TODAY!**

"Sponsors of the Contour Machining Conferences"

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See us at Booth 600, ASTE Western Tool Show

TECHNICAL BRIEFS

Rolling

Remote-controlled unit marks slabs, blooms

Slabs and blooms at Jones & Laughlin Steel Corp.'s new 44-in. blooming mill now are stamped by remote-control.

A product of M. E. Cunningham Co., Pittsburgh, the stamping unit consists of three elements. First is a pneumatic stamping head. This provides up to nine marking wheels. Second is a trolley-mounted mechanism for horizontal positioning.

Operator views marking process as hot slab (arrow) moves on.

Third part is an operator's console. It contains a series of control buttons for actuating the stamping cycle and changing characters in the marking head.

The slab and bloom marker at Jones & Laughlin stamps six numbers. These include: heat number, furnace number, cut letter and grade code. The unit makes deep, clear-cut even impressions even when scale is present.

Management

Metals firms and workers profit by suggestions

Employee suggestion programs are gaining nationwide acceptance. A survey just completed by the National Assn. of Suggestion Systems, Chicago, indicates this. Conducted among its 1163 members, the survey shows that last year, 6,628,386 employees submitted 1,692,704

suggestions through formal programs. Of this number, 25 pct or 434,375 worker ideas were adopted. For these, employees got $13,956,-841.

Bar Machine Idea — Not long ago, Eastman Kodak Co., Rochester, N. Y., announced payment of an award of $23,495 to an employee. The awardee, a screw machine operator, suggested a combination machine to eliminate separate production operations in making a movie camera.

U. S. Steel recently announced results of its first year's suggestion plan: 6812 employee ideas adopted. These people received over $190,-000.

Steel Workers Suggest — In the first year of its operation, U. S. Steel's suggestion plan received 58,148 suggestions.

"Suggestion systems are gaining greater attention from various trade groups" according to R. E. Daschke, NASS president, who is manager of the American Cyanamid Co.'s employee suggestion plan.

Instrumentation

Device detects minute variations in core sheets

Minute dimensional changes in transformer steel core sheets are accurately measured by a new device. It's capable of detecting movements of the order of 1/200,000 of the average thickness of a human hair. The unit measures 1/100,-000,000 inch per inch.

Used for research and development work by Allis-Chalmers Central Research Laboratories, it's called a magnetostriction measurer. It measures dimensional changes in transformer core sheets produced by an alternating magnetic field. These changes cause a hum in transformers.

Intensity of noise runs proportional to magnetostriction (dimensional changes) of the core steel.

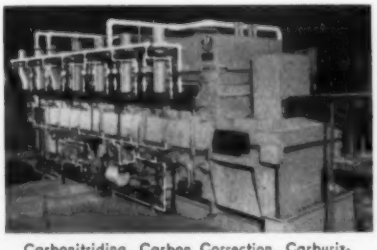
Breaks A Barrier—Prior to this, says Allis-Chalmers, there has been no known research tool to rapidly, economically measure alternating

THE ELECTRIC FURNACE CO. EF SALEM, OHIO

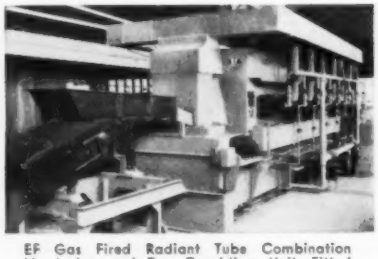
EF FURNACES

for continuous carbonitriding, carbon correction and scale-free hardening of small parts

175 TO 2000 LBS. PER HOUR



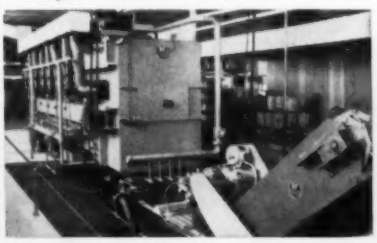
Carbonitriding, Carbon Correction, Carburizing, Scale-free Hardening and other Processes are Handled Uniformly, Economically and Continuously in EF Chain Belt Conveyor Furnaces.



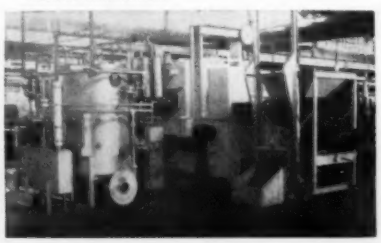
EF Gas Fired Radiant Tube Combination Hardening and Dry Cyaniding Unit Fitted with an Automatic Feeder that Distributes the Parts Evenly on the Chain Belt Conveyor; and a Dual Quench.

The EF chain belt conveyor furnace is one of the most satisfactory continuous heating units yet devised for scale-free hardening, carbon restoration, carbonitriding, carburizing and non-decarb heat treating small and medium size parts. The material is loaded onto our rugged heat resisting cast link conveyor belt; carried through the furnace; heated uniformly to proper temperature; automatically quenched and discharged. No pans or trays are needed. Hundreds in daily operation prove the dependability and efficiency of our design. 11 standard sizes. Capacities to 2000 lbs. or more per hour. Gas, oil or electrically heated. Furnished complete with any desired feeding, discharging or special atmosphere equipment. Write for folders describing our chain belt conveyor type and other production furnaces.

The Conveyorized Partitioned Dual Quench Moves Laterally to Permit either the Complete Oil or the Water Quenching Equipment to be Positioned under the Sealed Furnace Discharge.



This EF Special Atmosphere Unit can Operate as either an Exothermic or Endothermic Generator. Used with EF Continuous Belt Hardening Furnaces for Scale-free Hardening or Carbon Restoration.



EF

ASK FOR BULLETIN 462-CB.

shows typical installations of EF Gas-fired, Oil-fired and Electric Furnaces.

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magnetostriction caused by a 60 cycle-per-second sine wave magnetization of a sample strip of material.

A steel company has a license from Allis-Chalmers to use the device. It will aid the firm's program to produce steel with improved magnetostriction characteristics.

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when you order

gray or alloyed iron

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Key Components—Key parts of the unit include: a magnetizing coil, a capacitive micrometer oscillator, a coil form, a strip clamp, and a mounting arrangement

Lab man checks minute variations in core steel via this setup.

The magnetizing coil is wound on a plastic coil form with a sufficient number of turns to maintain the desired flux density uniformly throughout the active region of the strip sample.

Both magnetization and demagnetization of the sample strip can be controlled by regulating the current supplied to the coil.

Metallurgy

A symposium on the "Iron and Steel Industry in India" will be held under the auspices of the National Metallurgical Laboratory, Jamshedpur, from Feb. 4 to 7, 1959.

Invitations are being extended to technologists in other parts of the world to attend the symposium. Technical papers are being asked for. Those interested may contact Dr. B. R. Nijhawan, Director, National Metallurgical Laboratory, Jamshedpur-7, India.

Welding

Locomotive builder makes new pistons from old

An economy-minded company is reclaiming aluminum diesel locomotive pistons. At its Auburn and Schenectady, N. Y., and St. Louis, Mo., plants, Alco Products, Inc., makes new pistons from old ones.

Removing the old worn ring carrier, welders put a new cast "Ni-Resist" aluminum carrier in its place. The piston then returns to service at about half the new-part cost.

Using Sigma welding, pistons can be rebuilt as many as three times. This is a 300 pct increase in service life. In fact, reclamation has increased the life of some pistons by more than 2,000,000 miles, Alco reports.

How It's Done—After the worn carrier is removed, the piston is degreased and machined. The new aluminum carrier is shrunk in place. After being pre-heated to 300°F., the assembly is mounted on a positioning fixture for welding.

Small 9-in. diam pistons for smaller model engines are handled by mechanized Sigma welding. Manual Sigma welding repairs the

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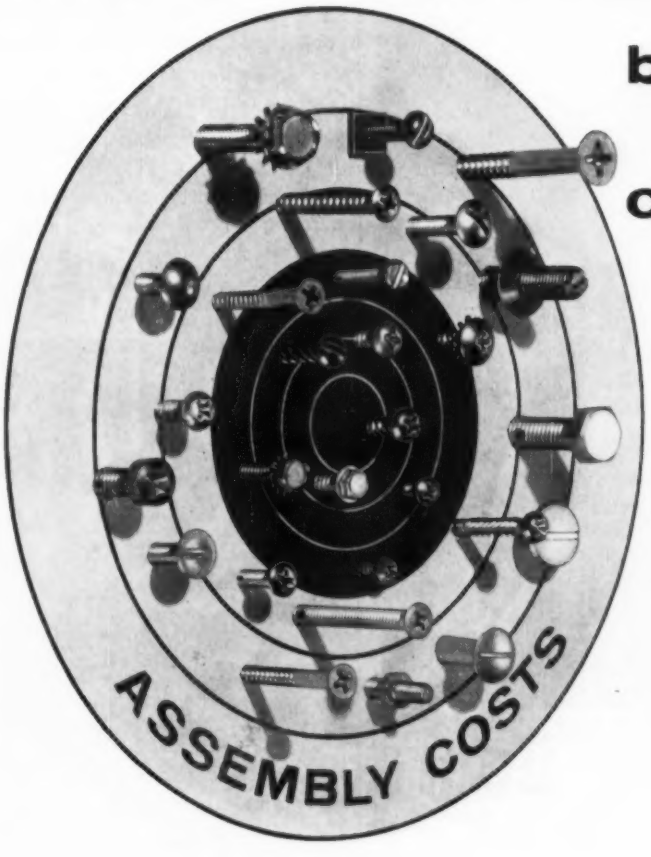

Assembly accounts for up to 80% of the total cost of production. For most manufacturers, it is the biggest target for cost reduction.

If you are missing out on savings you could be making, why not get the expert assistance of Continental Assembly Specialists?

You'll find them ready and able to analyze your fastening operations and offer practical cost-saving ideas. They'll show you why assembly-men everywhere agree, ***"You can count on Continental."*** Write or phone: Continental Screw Co., 450 Mt. Pleasant St., New Bedford, Mass.

NO "FAVORITE" FASTENERS
Continental Assembly Specialists are unbiased toward any particular types . . . Continental makes all types. The fastener they recommend for your job is the one proved best by careful cost analysis.

MORE STANDARDS IN STOCK
Continental can supply any recognized standard type, style or size. Also, many fasteners ordinarily considered "specials" are available among the millions of screws constantly in stock to meet needs of Continental customers.

MORE "SPECIAL" EXPERIENCE
Continental is known throughout industry as the "specialist in specials," — leads in production of special designs. Continental is also your supply source for special-purpose fasteners, such as HOLTITE NYLOK Self-locking Screws.

MORE "SPECIAL" PRODUCTION FACILITIES
With Continental's modern, precision controlled equipment, many special shaped screws formerly machined from bar stock can be produced faster, at lower cost — with higher tensile strength and excellent surface quality.

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Kinnear Rolling Doors

Basic advantages make them first choice in any era...

Yesterday TODAY TOMORROW...

The door with the curtain of interlocking steel slats was *originated* by Kinnear. Its advantages are basic — as important to door efficiency as the invention of the wheel to improved land travel.

It is today's finest type of door, *made the finest of its type by Kinnear.* For example:

Opening straight upward, Kinnear Rolling Doors coil out of the way above the opening, into the compact hood mounted on the wall either inside or outside the opening (or often within the wall, where desired).

Kinnear Rolling Doors also give you full use of all space around doorways at all times. *No extra space of any kind is needed for their opening and closing action.* And *Kinnear* design makes sure the opened door always rests *above* the lintel — never steals clearance space overhead.

The rugged interlocking steel-slat curtain *(originated by Kinnear)* also gives you added protection against fire, theft, vandalism, storms, and accidental damage.

For extra resistance to weather and corrosion, Kinnear Rolling Doors are heavily galvanized, with 1.25 ounces of pure zinc per square foot of metal (ASTM standards).

Kinnear Rolling Doors are built any size, for easy installation in either old or new buildings of any construction. Manual-lift, chain, or crank operation — or motorized push-button control. Also available in non-ferrous metals. *Write for full details.*

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Offices and Agents in All Principal Cities
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KINNEAR ROLLING DOORS
Saving Ways in Doorways

TECHNICAL BRIEFS

larger 12½-in. diam pistons. Automatic welding is impractical on the large pistons. This is due to valve pockets which interrupt the contour of the crown.

Needs Two Passes—An SWM-3 Sigma welding machine, a product of Linde Co., Buffalo, N. Y., is used for the mechanized operation. It requires two passes with a total elapsed welding time of two minutes per piston. A Linde SWM-2 portable Sigma welding machine, equipped with an HW-11 torch, joins the larger pistons. These also require two passes with additional reinforcement in the corners.

Welding lets these pistons last three times normal life.

After welding, the joint area is machined. Then the piston is polished and packed for shipment.

Argon Shields Zone—To insure high-quality welds, Alco uses Oxweld No. 23 wire, 1/16-in., diam. It shields the weld zone from contamination with 99.995 pct pure argon.

Minimum weld penetration is 1/16 in. at 320 amp, DCRP, for mechanized welding and 300 amp, DCRP for manual welding.

Fabrication

Line produces honeycomb material continuously

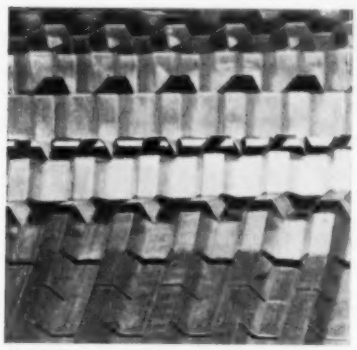
Strip continuously feeds into one end of a new production line;

honeycomb continuously feeds out the other end. Stock moves right through forming, slotting, folding, skin application, bonding, trimming, cutting, even stacking.

A creation of Formacel Corp., Los Angeles, the continuous mechanized line manufactures many types of multi-cell cored structure. The engineering firm designs and builds single automatic facilities that continuously produce a cored, load bearing structural building panel, for example, 48-in. wide by 96-in. high and 3-in. thick at the rate of 4000 per month.

Light In Weight—Such a metal panel weighs approximately 65 lb total. This is about 2 lb per sq ft. It's cored with aluminum. This is automatically formed to hexagonal, square, diamond or corrugated cell configuratiqns.

Panel facings or "skins" are structurally integral with the core.



Close-up photo shows strip as it turns into honeycomb.

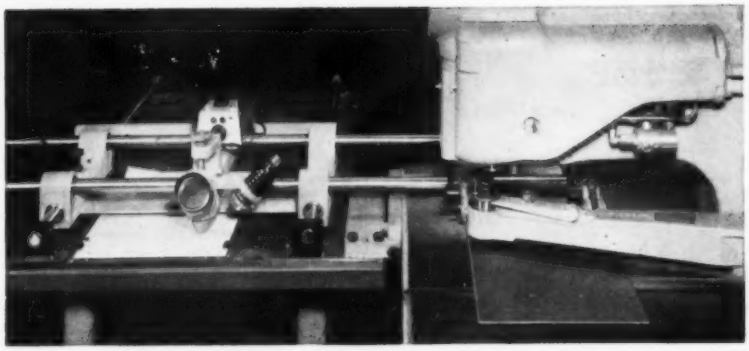
It results in a shear and compression strength to weight factor considerably strong.

Many Possibilities—Cored panels can, during automatic manufacture, be filled with foam plastic. They may be finished one or both sides with primer, lacquer, enamel, veneer, plaster board, or almost any other conventional inside or outside surface treatment.

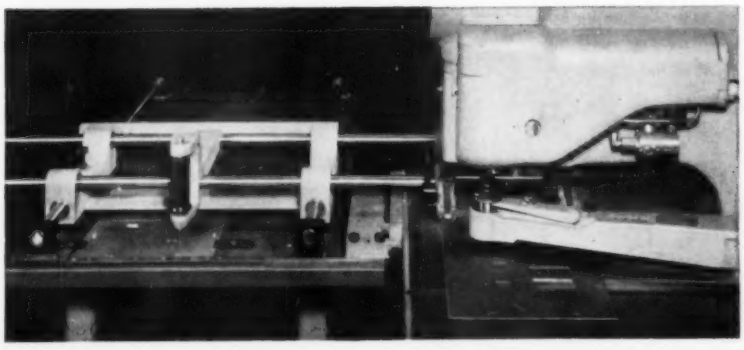
Welding

Submerged arc welder rides little go-cart

Thanks to a unique little go-cart setup, a portable semi-automatic



shortest distance
between blueprint and product



The DUPL-O-SCOPE

Firms punching or notching sheets up to ¼" mild steel in medium runs know how profitable it is with a Strippit Fabricator-Duplicator. Now, it's even faster with the new Dupl-O-Scope, which eliminates the template drilling and layout step!

Readily mounted in the Duplicator stylus bracket, this precision optical pickup device quickly translates a drawing, layout or printed circuit sample into a punched metal template — ready for rapid-fire punching and notching on the Fabricator-Duplicator using standard interchangeable tools or "specials" made up to your requirements.

Write today for catalog and an actual demonstration on *your* work at *your* plant by a Strippit Mobile Unit. Warehouse stocks at Chicago and Los Angeles.

The versatile Strippit Fabricator, one-machine shop for quick-change punching, notching and nibbling — available with positive Duplicator for high-speed production punching and notching in complex patterns including printed circuit boards.

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Electro-magnetically balanced rotor cuts vibration, prolongs bearing life.

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Fewer parts to wear and repair.

No packing or priming needed

Heavy duty pre-lubricated ball bearings require no further attention.

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TECHNICAL BRIEFS

welder can make long fillet welds on double-beveled T-joints. The welder cone rides a specially-rigged cutting buggy.

A heating torch precedes the welder. It preheats the joint to about 200°F. A flux recovery unit follows the welder. This collects excess flux that is not consumed in welding.

Uses Special Flux — Specially compounded alloy flux is used with a mild steel electrode provided by Lincoln Electric Co., Cleveland. This produces weld metal with properties similar to those of the T-1 steel base metal. Five passes made at speeds of 10 to 14 ipm are necessary to fill each side of the joint.

The large girders have 1¼-in. thick webs and 2-in. thick flanges. They were fabricated for The John F. Beasley Construction Co. of Dallas, Muskogee and Chicago. The girders are 80-ft long when complete. They are main members of the base of a large portable derrick.

Fire Prevention

Steel plant feels it's wise to guard against fire

When you've spent over $7-million for new equipment you take every precaution to guard it against damage and downtime. So states W. F. Schneid, vice president, Eastern Stainless Steel Corp., Baltimore.

The equipment he refers to is the firm's new Sendzimir mill. This mill accounts for 50 pct of the corporation's dollar capacity. The cold reducing type mill produces stainless steel sheet up to 48-in. wide. Gages can vary from 0.078 down to a present minimum of 0.007 in. All are held to extremely close tolerances.

Damage Poses Threat — Should any damage occur to the mill or its drive equipment, it might take six months to repair the damage or re-

place the machinery, Schneid points out.

One of the prime thoughts when installing the mill was fire. The entire roll assembly operates in a special flammable oil. And there's 35,000 gal of this in the system.

In addition, power supplies via a 3000-kw dc Westinghouse generator. Its intricate controls drive reversible winder and mill motors totalling 3750 hp at production speeds of up to 700 fpm.

Engineers of Walter Kidde & Co., Inc., Belleville, N. J., were called in. This firm developed and installed carbon dioxide systems. Such systems quell a blaze almost the second it flashes.

What It Did—There were two most likely fire hazards. These included: (1) the oil storage and pump room, adjacent to the huge generator and motor room; (2) the oil bath air filter, up stream of the generators, which cleanses recirculating air for the generator and motors.

Each is now equipped with an automatic carbon dioxide fire extinguishing system. Both of these draw from one central bank comprising 51 75-lb gas cylinders.

Automatic Flooders—If a fire occurs in the oil storage and pump room, rate-of-temperature-rise detectors on the ceiling immediately trip all 51 carbon dioxide cylinders. Under its own pressure the gas floods from the cylinders and passes through piping to a time delay.

Built into the piping between the cylinders and the time delay are pressure-operated switches. These actuate via the inert gas. They cut off all fans, blowers and pumps. And they also sound audible alarms both in the storage-pump room and in the mill.

Holds Up Gas—When the gas reaches the time delay, it holds-up for 30 seconds. This gives anyone in the storage pump room time to vacate. After this interval, the carbon dioxide continues through piping to the "in trouble" space where it discharges from multi-jet nozzles. The fire smothers in seconds.

NEW BOOKS

"Agricola On Metals" is "one of the most significant single books in the history of technology," its publisher states. If "amazing" replaced "significant" it would still be true. This textbook of mining and metallurgy was prepared 200 years before the Industrial Revolution. Translated by ex-President Hoover and wife, it's the work of Georgius Agricola, a 16th Century technical editor. His classic words and woodcuts not only are prime examples of Medieval Art, but the complete book must have been to past technologists what the finest journals and texts are to today's. More credit is probably due Agricola than he'll ever get; without the

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now with
FORGED ALLOY
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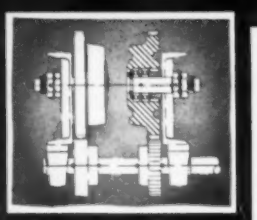
Only Abell-Howe offers you forged steel dependability at all critical points of wear—wheels, gears *and* pinions! Furthermore, Abell-Howe rugged outrigger construction keeps bridge in square—provides lateral bracing for bridge girder. Smooth fluid drive provides cushioned starts whatever the load—reduces reversing shocks. To further assure smooth operation and lasting service, anti-friction bearings used throughout—with double row ball bearings in end truck wheels. Here's crane value that can't be beat!



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Combine positive wheel mounting with immediate removability. To remove axle, simply loosen two nuts, twist axle 90° and pull it out. Wheels, too, are as easily removed with no dismantling of truck frame. "QUICKLOCK" is exclusive with Abell-Howe.

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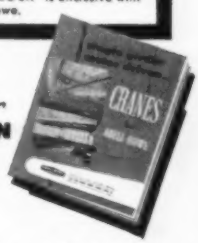

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CM LODESTAR ELECTRIC CHAIN HOIST
⅛ to 1 ton capacites—First truly heavy duty version of small electric hoist. ⅛ ton model weighs only 51 lbs. Heavy duty self-adjusting brake. Upper-lower safety limit switches. CM-Alloy load chain.

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½ to 5 ton capacities—Compact, enclosed design. Low headroom. Continuous duty motor with thermal overload protection for heavy duty service. Precision bearings and helical gears for long life. Only 110 volts at push button control.

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Rugged lightweight hand hoists and pullers...to make your job easier and safer

CM CYCLONE HAND HOIST
¼ to 10 ton capacities—Easy to carry and lift. One ton model weighs only 36 pounds. Made of tough aluminum alloy. CM-Alloy load chain. High efficiency. Lifetime lubrication.

CM PULLER THE "ONE MAN GANG"
¾ to 6 ton capacities—Lifts or pulls at any angle. Lever handle operation. Automatic load brake holds at any point. ¾ ton model weighs only 13 pounds. CM-Alloy flexible load chain.

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NEW BOOKS

water power, metals, materials handling and crude machinery of the 1500's, Watt's steam engine and Arkwright's textile machinery might never have existed. Probably, today's technical journalist's highest hope is that his work will be to the 24th Century what Agricola's is to the 20th. 128 pp. $2.50 per copy. Burndy Library, Norwalk, Conn.

"Control of Non-manufacturing Costs" tackles the vexing situation when increased sales volume actually rips into profits. It tells how some firms prevent such losses. 142 pp. $3 per copy ($2 for members.) American Management Assn., 1515 Broadway, New York 36.

"Mathematical Programming" tells how applied mathematics solves problems for industrial managers. Both authors are authorities. N. V. Reinfeld is director of National Institute of Management; W. R. Vogel is former statistical officer of Benicia Arsenal and training director, U. S. Ordnance Management School, Rock Island, Ill. 274 pp. $9 per copy. Prentice-Hall, Inc., 70 5th Ave., New York 11.

"The Metallurgy of Vanadium" by William Rostoker is an addition to the growing volumes on once obscure materials. Though useful to X-ray and sulfuric acid making, vanadium's key use is in ferrovanadium. Yet, just the last chapter's 26 pages deal with alloy additions. Only some 8 deal with steelmaking, 4 cover cast iron, 4½ titanium, 4½ magnetic alloys, 4 high-temperature alloys, and some references. Contrast these with 32 pages on extractive metallurgy, 13 on physical properties, and 16 on mechanical properties. Despite superfluous statements like, "One cannot discuss the properties of a pure metal because absolute purity is only an extrapolation used in the same sense as infinity is used by

the mathematician", the book is an intelligent general work on vanadium. 185 pp. $8.50 per copy. John Wiley & Sons, Inc., 440 4th Ave., New York 16.

"Tooling for Metal Powder Parts" (an ASTE manual) emphasizes planning and tooling for structural parts (i.e., cams, gears, latches). It gives advantages, limitations, comparisons with other processes, and cost considerations. Reviewed are: design, production, briqueting, tooling, even finishing. 256 pp. $7.50 per copy. McGraw-Hill Book Co., 330 W. 42nd St., New York 36.

"Materials & Methods of Sales Forecasting" extensively covers the subject and gives sources of more data. 239 pp. $5.25 ($3.50 to members). American Management Assn., 1515 Broadway, New York 36.

"Stress Corrosion Cracking and Embrittlement" sums up a symposium of the Electrochemical Society. It treats major developments of the last 12 years. University and industry lab work is reviewed. 202 pp. $7.50 per copy. John Wiley & Sons, Inc., 440 4th Ave., New York 16.

"Separation & Purification of Materials" is technical but readable. It tells how to remove unwanteds from liquids and gases. In some cases, these may be profitable by-products. Covered: air pollution, solids removal, distillation, gas separating and much more. To prove it's up-to-date, it has a chapter on nuclear engineering problems. 327 pp. $10 per copy. Philosophical Library, 15 E. 40th St., New York 16.

"Dispersion of Materials" duplicates the above book to some extent. The titles say why. Briefly, it tells about handling solids, liquids and gases. And it covers this with an eye on being better and cheaper than the competition. 230 pp. $10 per copy. Philosophical Library.

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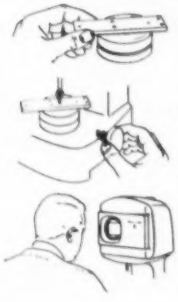

A Just set part to be measured on anvil . . . no masters or set gages needed. Large work table makes it easy to adapt special fixtures, accommodates widest variety of work.

B Turn knob to lower spindle . . . it will stop automatically on contact, with constant spindle pressure.

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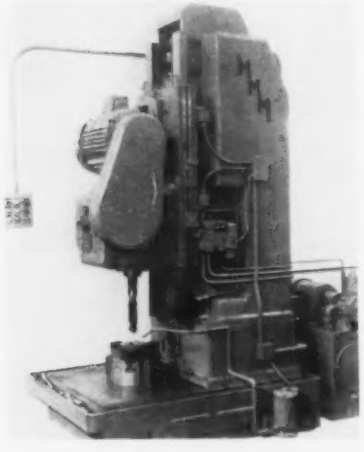


Drilling, Boring Unit Is Rugged, Versatile

Ruggedness without sacrificing versatility is offered by this vertical drilling and boring machine. Though sturdy built, it nevertheless accommodates many types of heads, fixtures, indexing tables and bases, to perform a wide variety of jobs. It comes in models with capacities up to 60 hp, with either 15 or 30-in. strokes. Vertical slides are 26-in. wide, 48-in. long, and 20½-in. across the ways. Feed valves are cam actuated. Slide-mounted cams provide fast stroke setting changes. The column can be arranged with a series of risers for a wide range of large work. Automatic cycling includes rapid traverse down, feed and rapid return. Variations of this automatic cycle are available. The machine's large base contains a wide chip collection area. It also has convenient clean-out doors and a built-in coolant system with a coolant guard. (Motch & Merryweather Machinery Co.)

For more data circle No. 44 on postcard, p. 187

Press Brake Die Eliminates Work Marking

A new type female press brake die eliminates work marking. Using roll inserts, it also reduces die set-up and changeover time. This die works with any conventional press brake or punch press, mechanical or hydraulic. Designed especially for use where machines form polished, painted or bright metals, the die differs from other V-dies; its die block houses two hardened and ground, half-round inserts. These inserts roll up and toward the opening in the die block as the male die enters the material to be formed. This rolling action does away with marking of work. After each operation, a compression spring returns the roll inserts to a flat position, ready for the next bend. Up to 12-ft standard lengths of the die are obtainable for press brake use. Short sections are available for punch press operations. (O'Neil-Irwin Mfg. Co.)

For more data circle No. 45 on postcard, p. 187

Motor-Generator Gives Both AC and DC Current

Direct and alternating current are generated at the same time, when needed, by this motor-generator set. The unit is a combination dc arc welder of 200-amp capacity and an ac power supply of 5-kw capacity. It provides dc welding current (for either straight or reverse polarity electrodes) instead of ac welding current with the ac power. AC can be drawn from it for lights and tools at the same time the set is serving dc welding. The dc welding generator rates 200 amp. at 25 v, on 100 pct duty cycle. It has a 30 to 225-amp welding range for intermittent use. Weld current of five different ranges easily adjusts via a main switch; 100 steps of fine adjustment are possible. The generator also gives 5-kw, 110/220-v, single phase, 60-cycle ac power. (Hobart Bros. Co.)

For more data circle No. 46 on postcard, p. 187

Crawford Door Company uses J&L superior quality, oil-tempered spring wire in 18 sizes for torsion and extension springs. Springs range from a few feet long to giants over 12 feet long, capable of raising 3,500-pound industrial doors without effort.

"UNIFORM HEAT TREATING AND TEMPERING PAYS OFF IN SUPERIOR J&L SPRING WIRE"

...says Crawford Door Co. official

"J&L has a superior spring wire because of the control they are able to maintain in their heat treating and tempering operations," reports Mr. Jerome Fansler, vice-president of the Crawford Door Company, Detroit, Michigan.

"J&L spring wire is properly tempered. This means the wire will coil uniformly. There are no surface imperfections or potential breaking points."

Crawford Door uses J&L oil-tempered medium basic spring wire for torsion and extension springs. They buy 18 sizes, ranging from .192 (13/64") to .293 (19/64").

Every coil of J&L spring wire is thoroughly tested for uniformity of physical and dimensional properties. This uniformity can speed your production, reduce the number of rejects. J&L has complete control of wire quality from ore through finished product. When you specify J&L, you are sure of wire that is tops in quality yet competitive in price.

Next time you buy wire, call in your J&L representative for fast, satisfying service. Or write direct to Jones & Laughlin Steel Corporation, 3 Gateway Center, Pittsburgh 30, Pennsylvania.

J&L STEEL

Jones & Laughlin Steel Corporation

PITTSBURGH, PENNSYLVANIA

Detachable-body Truck Hauls Scrap, Slag

Railroad switch engines and highway tractor-trailers have an inherent advantage. They detach loads and move on to another job. Thus, the engine doesn't sit idle during loading and unloading. Now comes a unique materials handler for metalworking plant use which has this same advantage. Its truck body actually detaches. This can be filled with some 40 cu yd of salvage scrap, ashes, spent sand, etc. while the truck keeps on the move. In time, its maker expects to produce such trucks to lift and haul unlimited loads of raw materials, hot ingots, sub-assemblies, giant castings. Containers are under development to handle sludge, chemicals, oil and waste liquids. The truck performs all pick-up and handling operations without the driver leaving the cab. It does jobs by itself, needing no winches, sheaves, telescopic cylinders, cables or chains. (Dempster Bros., Inc.)

For more data circle No. 47 on postcard, p. 187

New Paint Permanently Marks Steel Stock

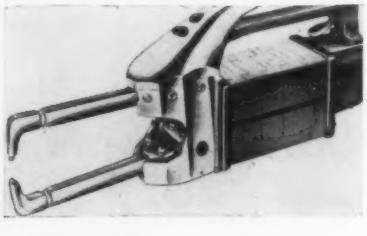
Mark bare steel with a new paint and you'll find it's there to stay. You can't effectively paint over it. The material penetrates right through subsequent paint layers. Applicable by brush, spray, or stencil, it provides practically a permanent mark. Prior or during fabrication, users can apply code numbers, etc. Putting a protective coating on the steel doesn't hide the mark. It shows right through. And it continues to identify the item through all subsequent fabricating and assembly actions. By keeping code marks on steel items, users might be able to speed up production, without confusion. When you don't need the mark, you merely brush a special paint over it. (Phillips Products, Inc.)

For more data circle No. 48 on postcard, p. 187

Thread Grinder Handles Small Workpieces

Thread grinding of small workpieces is a specialty of this automatic single-purpose machine. It can precision grind: taps with straight or helical flutes (with or without relief), micrometer spindles, thread gages, small worms with fine pitches, and similar items. It uses single rib grinding wheels with longitudinal feed exclusively. Operation is almost completely automatic. After setup, the operator need only change the workpiece. On the return stroke of the table the machine re-profiles the grinding wheel. Actually, it can re-profile at any one of three selectable speeds. Automatic feed compensates for decreased wheel diameter; this permits grinding to accurate finish dimensions. It reduces subsequent measuring time considerably. (Cosa Corp.)

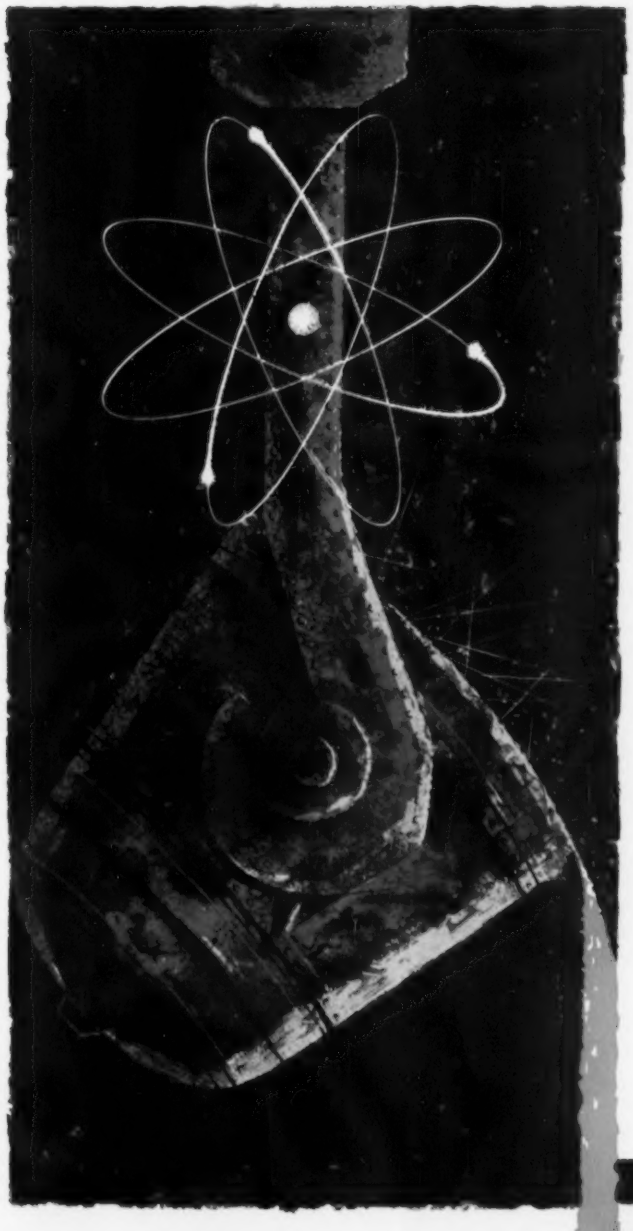
For more data circle No. 49 on postcard, p. 187



Fixed-top Tong Is Portable Welder Feature

This fixed-top tong is a feature of a new portable spot welder. The tong lets an operator rest welder weight on the exact welding spot for added contact pressure. It saves time and guess-work and reduces operator fatigue. The unit's clear throat is unobstructed by flexible lead cable. So it eliminates possible shorting of the welding circuit. (Peer, Inc.)

For more data circle No. 50 on postcard, p. 187



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Four Piece Assemblies at 600 per Hour With Kenco 15-Ton Electro-Safe Punch Presses

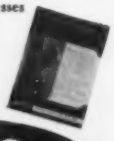
These two Kenco Presses each assemble four parts of electric irons at the rate of 600 components per hour at General Electric Company, Ontario, California. A third Kenco on the line assembles these components with a top plate. Parts are fed to the operators through hopper bins and assembled parts are carried away on a belt conveyer.

Kenco Electro-Safe Presses are used because of their unprecedented safety features and their ability to stay on the job — for maximum production. The press has no flywheel — in single stroke operation the press and motor go dead, eliminating double-tripping and stored-energy hazards. The operator must hold two widely spaced controls depressed to single trip the machine. A locking dial permits changing from "single trip" to "continuous trip" or "inching".

The Electro-Safe control can be connected to the die area to stop the ram on the downward stroke should any irregular feeding occur, thus protecting both the part and the die set. In addition, extra long ram guides keep perfect alignment which results in long die life, and many other exclusive features to keep them on the job.

You too can increase production with Kenco Presses — and at the same time increase profits. Can we give you additional information?

JOB FACTS:
Company: General Electric Co., Ontario, California
Machines: 3 Kenco 15-Ton Electro-Safe Punch Presses
Job: Assembling 4 Parts each for electric irons
Shifts: Up to 3 for 9 months.
Maintenance: Brake relined. Considerable Brake Failure
Production: 600 assemblies per hour
Remarks: "The presses are extra safe" and "Dies last longer".



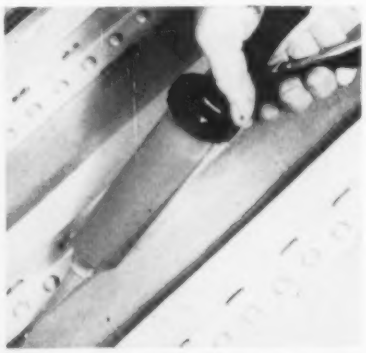
2 Ton · 5 Ton · 8 Ton · 15 Ton · Deep Throat · Electro-Safe · Slow Speeds · Specials

KENCO MANUFACTURING CO
5211 Telegraph Rd., Los Angeles 22, Calif.

NEW EQUIPMENT

Sealant Gun

Lightweight and hand operated, a sealant gun speeds applying of caulking compounds. A squeeze of the trigger smoothly extrudes its contents. Made of solvent-resistant reinforced plastic, the gun uses disposable polyethylene cartridges,

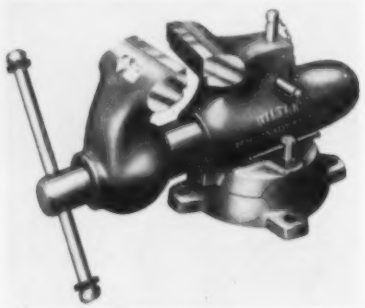


plungers, and nozzles. Easily-removable nozzles come in many sizes and shapes. (Semco Sales & Service, Inc.)

For more data circle No. 51 on postcard, p. 187

Swivel-jaw Vise

On a new vise for clamping irregular workpieces, the back jaw pivots. A pin holds it in place for straight clamping action. Removing



the pin lets the jaw pivot right or left to lock angular work pieces securely in place. (Wilton Tool Mfg. Co.)

For more data circle No. 52 on postcard, p. 187

Numerical Controls

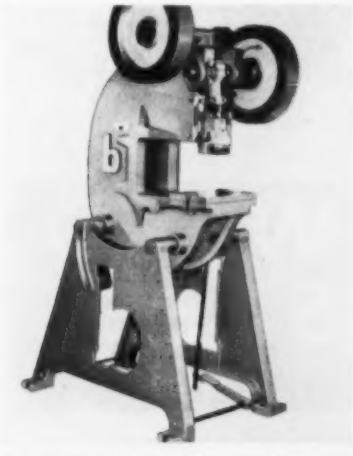
Numerical control is standard (not optional) on a new production machine tool. Of West German make, this high precision boring

and milling machine has near jiborer accuracy. But it's a highly rugged machine, too. Its standard rise and fall table has a working area of 63 x 38 in. The control panel is unusually compact. All movements are preselected and pushbutton operated. No fatiguing figuring or calculating need be done by the operator. Directions program easily from drawing to the machine. A color coding of controls simplifies the unit even more. (Marac Machinery Corp.)

For more data circle No. 53 on postcard, p. 187

Backed-geared Press

Back-geared presses recently introduced deliver 8 tons. They punch to the center of a 24-in. circle. Standard models have a 9-in. shut height, exclusive of bolster. Shut heights of 12 and 15-in. are also available. Flywheel speed is



approximately 100 strokes per minute. Standard stroke is 1¼ in.; other strokes are 1½ to 3 in. The press has an 8 x 11-in. bed area. Ram adjustment: 1½ in. bored for a 1 9/16-in. hole for punch shank. (Benchmaster Mfg. Co.)

For more data circle No. 54 on postcard, p. 187

Metal Expander

Developing more than 1580 tons of force, a new expander can stretch a steel ring weighing over 1½ tons smoothly and easily. In a demonstration the unit expanded a 60-in. diam, 26-in. high part with a 2-in. thick wall within ±0.010 in. of a true circle. The entire operation, taking one minute, is done cold. Heating of the part is unnecessary. (Grotnes Machine Works.)

For more data circle No. 55 on postcard, p. 187

Weld-die Adapter

Of a new design, a die adapter makes possible two or more simultaneous welds on the same machine. Welding pressures and current are equalized on each weld. A closed hydraulic system, formed by connecting die adapters, maintains uniform forces on each welding tip. (P. R. Mallory & Co. Inc.)

For more data circle No. 56 on postcard, p. 187

Presswork Handler

Fast and safe operation of OBI presses results from use of a "mechanical hand," a press builder says. The "hand" device runs mechanically and pneumatically. Its air fingers

SR . . . the dc rectifier type welder with new completely sealed semimetallic rectifier, new transformer and new weld stabilized circuit. Result is easiest arc starting ever, maximum arc stability, smoother, denser welds, current that handles all electrodes in all positions! Four models, 200 to 600 amps.
SRH . . . the same revolutionary improvements that set the Gold Star SR above and beyond the performance standards ever before achieved by a dc rectifier type welder. Designed primarily for compactness, the SRH is only 30¼" high — is ideally suited for stacking or paralleling in minimum space. Three models, 200 to 400 amps.
The miller GOLD STAR ALL STAR LINE
300 . . . combination ac, dc welder design comes of age with this new Miller model. Features: new magnetic amplifier circuit; improved wave form; new arc starting control; three electrically controlled current ranges for finest adjustment; instant changeover from ac to dc; built-in high frequency. An entirely fresh concept for inert gas and metallic welding. Four basic models with kits available to convert to seven different types of welders.
300-M . . . an ac welder for inert gas and metallic arc processes. Combines unequalled welding characteristics with Miller's unique electric control circuit which permits precise slow or fast start. Features: built-in high frequency, primary contactor and ½ KVA control transformer. Offered in three basic models at from 200 to 400 amperes with optional water and gas controls available.
Complete particulars on any of the above welders will be sent promptly.
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ONE OF THE NATION'S LARGEST AND MOST MODERN PRODUCTION FOUNDRIES

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No Grinding Necessary After Cut. One Stroke Cycle Clutch Operated by Hand or Foot.

The Bateman "Bantam" cuts 2" x 2" x ¼" angles and ¼" x 4" flats. Standard punches will fit this machine. The Coper will cope 1¼" through ⅛" material. It will punch ½" hole through ¼" material. With the clutch open, the Bantam will make 44 strokes per minute. It is made of high-grade cast iron, with the clutch, pin and dog made of hardened steel. The blades are made with tool steel. It is powered with a fly wheel and gear drive, and uses a small ¾ hp motor, 1750 rpm.

Bateman Bantam with punch....$575.00
Shear only $495.00
Shipping wt. 750 lbs.

BATEMAN FOUNDRY & MACHINE
MINERAL WELLS, TEXAS

NEW EQUIPMENT

(or vacuum cups) pick up parts, locate each precisely in the die nest, actuate the press and finally eject the finished part. All this is automatic. Operator's hands are kept out of the die area. (Press Engineering Co., Inc.)

For more data circle No. 57 on postcard, p. 187

Gas Analyzer

Determining the amount of gases in steel alloys is this instrument's job. Recently installed at Electric Steel Foundry Co., Portland, Ore., it helps turn out better steel. Traces of dissolved or combined gases can

have marked effects on physical, chemical and electrical properties of pure metals and alloys. This instrument identifies and measures very small quantities of gas accurately. It provides important quality control at the furnace. (Fisher Scientific Laboratory.)

For more data circle No. 58 on postcard, p. 187

Drill Press Feed

New heavy-duty drill press air feed attachments are available. They control spindle feed on standard single and multiple spindle drilling machines. (Cleveland Pneumatic Industries, Inc.)

For more data circle No. 59 on postcard, p. 187

Foil Welding

Very accurate production welding of foil steels and other metals as thin as 0.003 in. is now reality.

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at your Service for...
TRANSPORTATION EQUIPMENT
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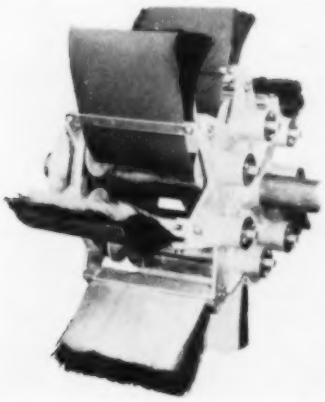
Making this possible is a series of precision side-beam tracks. These provide for alignment, support and longitudinal traversing of welding heads and variable speed carriages above welding positioners. (Airline Welding and Engineering.)

For more data circle No. 60 on postcard, p. 187

Abrasive Head

For finishing various metals, a new coated abrasive head carries a supply of abrasive for replenishing worn material. It uses either cloth or paper backed silica carbide or aluminum oxide abrasive. Material feeds from rolls which automatically advance via manual or solenoid



activation. The head can apply to portable or permanent tools. It particularly adapts to aluminum finishing in preparation of extruded shapes for anodizing, says its maker. Abrasive widths come 2 to 50 in. Motor speed recommended is 750 rpm. (Abrasive Machinery Corp.

For more data circle No. 61 on postcard, p. 187

Masking Tape

Pressure-sensitive masking tape recently developed withstands up to 425°F even when baked for several hour-long cycles. It does not stain metal surfaces to which it's applied. After baking the tape strips off easily and cleanly. (Permacel.)

For more data circle No. 62 on postcard, p. 187

Compacting Press

Completely automatic, a new hydraulic compacting press compresses two different metal powders

A consistent quality melt puts a feather in your cap!

Tribal regulations say feathers are to be won—the hard way! But Junior's campaign takes him no farther than Chief Keokuk's bonnet . . . where a quick trim turns it into a natty headpiece for the little "warrior."

HERE'S A SURE WAY TO STEP UP MELT QUALITY—AND KEEP IT THERE

Choose economical Keokuk Silvery . . . the superior form of silicon introduction. Pig for pig . . . car for car, its uniformity never varies—result, a consistently high quality melt. Handle by magnet, charge by weight, or count the pigs for equal accuracy. Available in regular analysis or alloyed to exact specifications. Aluminum makers, put a feather in your cap . . . use Keokuk Silicon Metal!

Keokuk Electro-Metals Company, Keokuk, Iowa; Wenatchee, Division, Wenatchee, Washington

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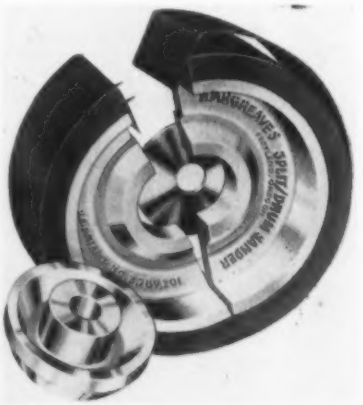
Keokuk Silvery Pig—the superior form of silicon introduction—is available in 60 and 30 lb. pigs and 12½ lb. piglets in standard analysis or alloyed to your specifications. Silicon metal and ferrosilicon are supplied in standard sizes and analyses.

in the same operation. Two independent, shuttle-type feed shoes and hoppers make possible bi-material compacting. Models are built in 50, 100, 200, 300 and 500-ton sizes. They compact both layers of material into one unit. (Kux Machine Co.)

For more data circle No. 63 on postcard, p. 187

Drum Sander

A split drum sander uses low cost strips of coated abrasives. Different from previous similar wheels, it has no hinge. Thus, the common fault of hinges cracking or breaking under high speed operation just can't happen. Its locking cone is part of the arbor bushing. The tool has no need for a backing flange due to its simplified design. Actually, it has a backing flange. If this were accidentally left off the assembly, though, no damage would result as long as the wheel is tight against a shoulder on the arbor spindle. The sander comes in 6-in.



diam sizes, widths of 1, 1½, 2, 3, and 4-in. Other diameters, 3 to 12-in., will be available in the near future. (Hargreaves Industrial.)

For more data circle No. 64 on postcard, p. 187

Teflon Belt

Teflon coated, a new glass fabric conveyor belt solves problems of heat and sticky materials in industrial handling. It is abrasion resistant and physically strong. The surface is smooth and exhibits remarkable anti-adhesive, anti-friction qualities. (Quaker Rubber Div., H. K. Porter Co.)

For more data circle No. 65 on postcard, p. 187

Diecasting Release

A new diecasting release agent eliminates carbon deposits. It combines a boil point and flash point higher than the highest possible die operating temperature. Ending costly die cleaning and polishing due to carbon deposits, the new die release agent contributes to better fill-out in deep-cored areas. It also speeds metal flow. (American Charcoal Co.)

For more data circle No. 66 on postcard, p. 187

Small Tracer

Small contour milling machines are available with a True-Trace 3-D valve. They perform either 360° or three-dimensional milling.

ERIE Bolts • Studs • Cap Screws • Nuts
In Alloys • Stainless • Carbon • Bronze

The reading on this Surfindicator measures more than just the fine finish on this special bolt. It measures the result of the precision craftsmanship your own specifications receive at Erie Bolt & Nut Company. Producing a wide variety of special fasteners to resist corrosion, extremes in temperature and tensile stresses as specified is our exclusive job . . . has been for almost half a century.

Send us your specifications for prompt estimate.

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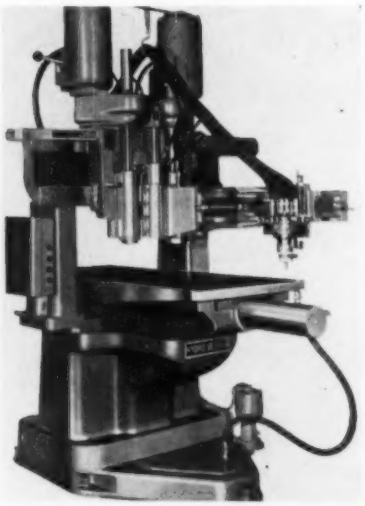
Table size is 28 x 64-in. with 36-in. of table travel. Cross travel of the cutting heads is 42 in. with vertical travel of 10 in. Feed rates are zero to 60 imp in all directions. Two 5-hp electric spindles mount on 12-in. centers. Twenty-four

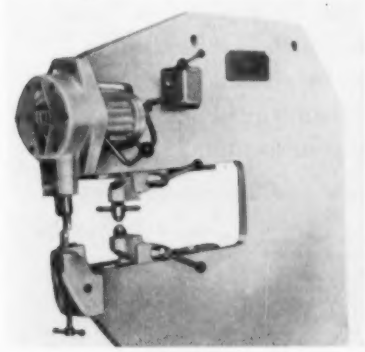


spindle speeds are available. These range from 87 to 2600 rpm. Spindles have a No. 40 taper, heavy-duty bearings and permanent lubrication. (Arrow Engineering Co., Inc.)

For more data circle No. 67 on postcard, p. 187

Shear, Forming Unit

This small version of a well-known line of shearing and forming machines handles 13-gage work or lighter. It operates with a stationary lower tool and a reciprocating upper

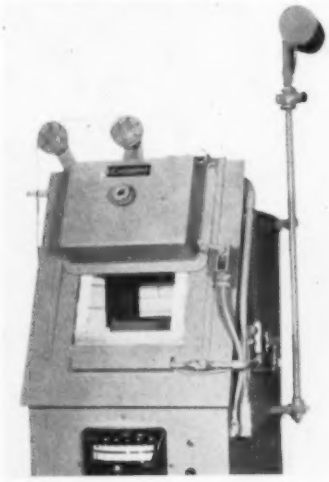


tool. Straight, circular, inside, irregular, slot and louver cutting can be done with it. So can beading, joggling, flanging, edge-bending and dishing. (American Pullmax Co.)

For more data circle No. 68 on postcard, p. 187

Box Furnace

Completely packaged, this atmosphere box furnace is rugged and compact. It's designed for continuous operation at all heat levels up to 2000°F. Chamber dimensions are 8-in. wide by 13-in. deep by

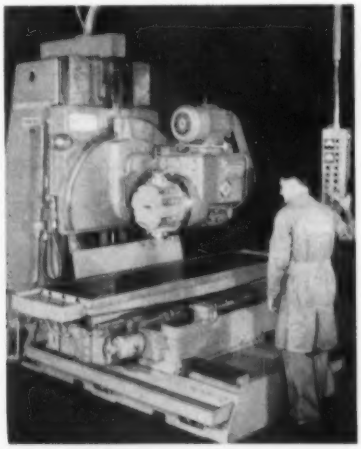


5-in. high. All electrical components and controls are in the base. A flame curtain, which ignites when the furnace door opens, protects the chamber. (Lindberg Engineering Co.)

For more data circle No. 69 on postcard, p. 187

Precision Machine

Boasting rigidity of a heavy-duty miller with range of a boring mill is this machine with an all-angle head. Its 15-hp double spindle head



adjusts to any angle. This reduces workpiece handling time when machining surfaces in a number of planes. The versatile mill takes sizable cuts, too. Its low-speed spindle, for ferrous material, has a speed range of 25 to 400 rpm; the high-speed spindle, for machining nonferrous, has a 250 to 4000-rpm speed range. Both spindles allow for rapid speed changes. Among jobs the machine handles are: angular milling, cross milling, end milling, slab milling, drilling and boring. Power feed rates are infinitely variable. They run between ½ and 200 ipm for longitudinal and transverse feed, ¼ to 100 ipm for vertical. Setup accuracy is a key feature. A pendant control assures positioning accuracy of less than 0.001 in. This control is pivot mounted for operator convenience. (Sundstrand Machine Tool Co.)

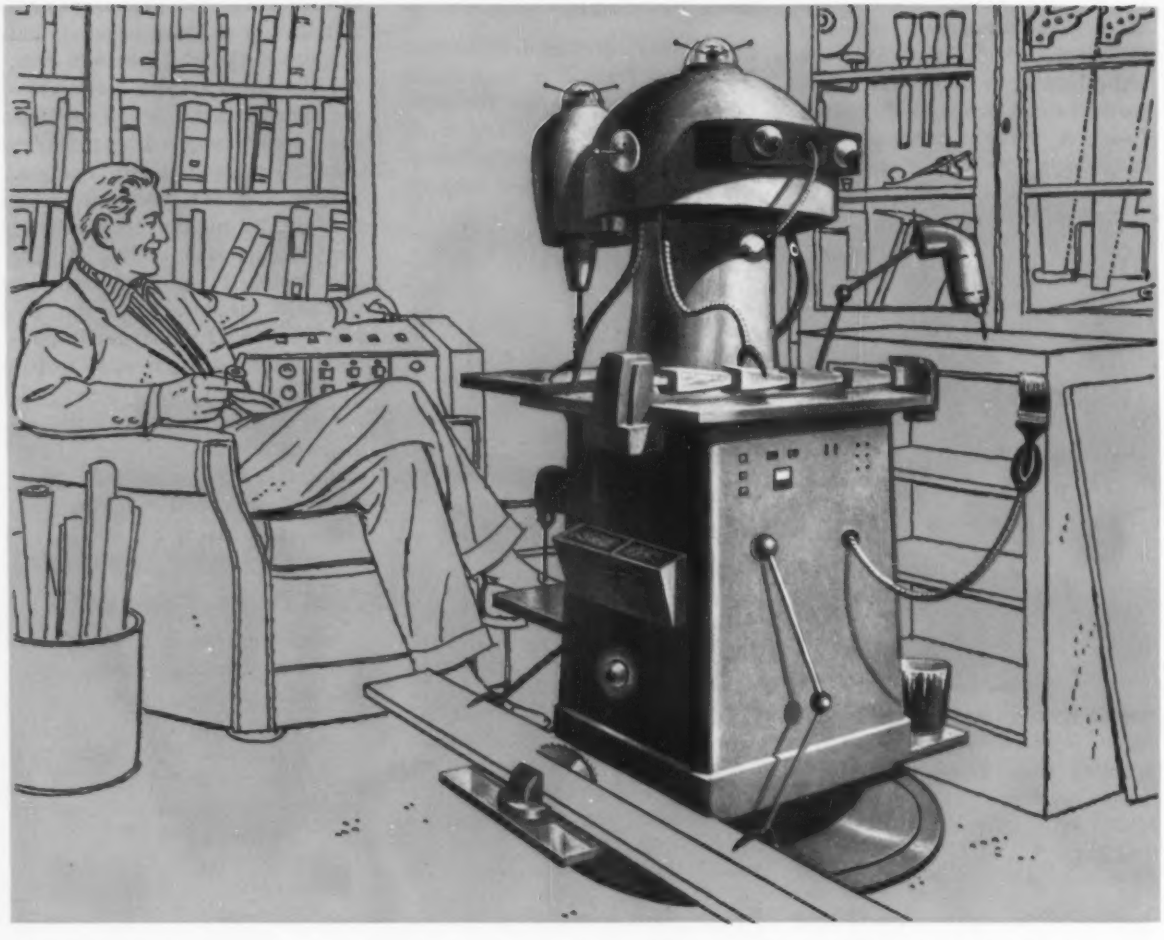
For more data circle No. 70 on postcard, p. 187

Tool Drills, Reams

In one operation, this tool can drill to a ream tolerance, countersink or counterbore holes. Jigs and fixtures are unnecessary with the drill motor unit which holds this tool. The multi-purpose drill is specially heat treated and sharpened for a specified job. Of Allegheny

Ludlum Steel Corp.'s DBL-2 high speed steel, it drills and countersinks ¾-in. deep holes in five seconds time. Tolerance is ±0.001 in. The tool's steel is alloyed with tungsten, molybdenum and vanadium; it has a fine grain structure. Hydraulically braced to the work area when the operator depresses a trigger, the drilling unit is rigidly secured via a foot collet. It comes in 16 different designs, each designed for a specific job.

For more data circle No. 71 on postcard, p. 187



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The Iron Age Summary

Steel Buyers Edgy on Deliveries

As delivery promises stretch out, steel users abandon hand-to-mouth policy.

Market improvement stems from broad-based industrial comeback.

■ Steel delivery promises are stretching out, and steel users are becoming edgy.

Steel buyers are beginning to realize they can no longer get by on hand-to-mouth inventories. In many cases they have started to rebuild their stocks as a hedge against a further stretchout in mill delivery promises. This is a switch from the policy of inventory cutbacks that prevailed earlier this year.

Buyers Are Ordering—"Some of our customers are again ordering in terms of quarters, instead of months or weeks," says one steel sales official. "We're booking good tonnages for October, November, and December delivery."

In the Midwest cold-rolled sheet orders are on the books for late October and November delivery. Delivery promises there are expected to move out from the current 2-to-4 weeks to 5-to-6 weeks within a few weeks.

Pickup Is Broad-based—In another producing area, a sheet mill already has booked enough October orders to account for one-third of an expected 20 pct improvement over August shipments.

An automotive strike would slow the trend toward a tighter steel market, but it wouldn't halt the upturn completely. The reason is that the improvement has come from a broad cross-section of industry while automotive companies have tended to drag their feet.

It Began in Midwest—The improved outlook for capital spending, a better tone in appliances, and more buying of equipment by the farmer have helped to boost steel demand.

The improvement in the steel market was born several months ago in the Midwest. It has since moved eastward to include Pittsburgh and mills farther east. Even medium-sized mills that had been lagging behind the trend are now beginning to feel effect of the pickup.

Sheet Mills Optimistic—Sheet producers are tentatively predicting a steady increase in shipments through October. But there is a certain amount of finger-crossing. The auto companies have said they will be back into the market for heavy tonnages in October; and some of this tonnage has been booked. Detroit still seems hesitant about placing big orders far in advance.

But even if the automotive market takes hold, and there is no strike, steel shortages, if any, will be temporary and regional. The steel industry is still pretty far away from a really tight market. There is plenty of capacity available, and only the steel users who let their inventories fall below reasonable levels will be pinched.

Steel Output, Operating Rates

Production	This Week	Week Ago	Month Ago	Year Ago
(Net tons, 000 omitted)	1,755	1,674	1,632	2,125
Ingot Index				
(1947-1949=100)	108.2	104.1	101.6	132.3
Operating Rates				
Chicago	69.0	76.0*	71.0	82.0
Pittsburgh	59.5	54.0	53.0	83.0
Philadelphia	72.0	74.0	67.0	89.0
Valley	52.0	49.5	52.0	73.5
West	80.0	79.5*	69.0	100.0
Cleveland	54.0	48.5*	53.0	81.0
Buffalo	56.0	49.0	54.0	100.0
Detroit	72.0	72.0	67.0	94.0
South	53.5	52.0	53.5	83.0
South Ohio River	80.0	86.0*	72.0	90.0
Upper Ohio River	69.5	81.5*	77.0	95.0
St. Louis	82.5	69.0*	68.0	86.5
Aggregate	65.0	62.0	60.5	83.0

*Revised

Prices At a Glance

(Cents per lb unless otherwise noted)	This Week	Last Week	Month Ago	Year Ago
Composite price				
Finished Steel, base	6.196	6.188	6.138	5.967
Pig Iron (gross ton)	$66.49	$66.49	$66.49	$66.42
Scrap, No. 1 hvy (Gross Ton)	$42.83	$42.83	$41.83	$48.50
No. 2 bundles	$29.17	$29.17	$29.83	$38.50
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	28.10
Copper, electrolytic	26.50	26.50	26.50	27.00
Lead, St. Louis	10.80	10.80	10.80	13.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin Straits, N. Y.	94.50	95.75*	95.25	93.00
Zinc, E. St. Louis	10.00	10.00	10.00	10.00

How a Buyer Feels About Pricing

Value buying is more important than price buying, says Andy Kennedy, Westinghouse purchasing vice president.

Supporting a price structure which allows suppliers to expand and increase production is also sound, he adds.

▪ Don't run the buyers' market into the ground. If you beat prices down to the point where you choke off product development and equipment expansion of suppliers, you will pay for it later in the quality and quantity of your supply.

This advice to buyers comes from purchasing vice president Andrew M. Kennedy, Jr., of Westinghouse Electric Corp. Yaleman Andy Kennedy is a 17-year Westinghouse veteran who has put the notion of purchasing statesmanship to work.

Not Price Alone—He has gone on record as supporting steel price increases that permit expansion of steel capacity. And he has promoted the doctrine of value buying as opposed to price buying.

He points out that operating costs rather than initial costs should determine which product to buy. In the case of a machine, consider its output, durability, and versatility along with price. The need for continued research effort by suppliers must be remembered in gaging prices.

Predicted Increases—"We're not price buyers," says Mr. Kennedy, summing it up.

This does not mean Westinghouse is not alert to price trends. Mr. Kennedy's department came within 2¢ of predicting the effect of recent steel increases on Westinghouse purchasing costs. It looks for copper prices to rebound sharply next year. It sees 1959 price increases for steel, aluminum, machinery and other items.

But Mr. Kennedy feels purchasing men can kid themselves about bargain shopping. If a steel buyer hunts around for an extra 50¢ under the table and then has to pay big premiums the next year, he's behind in the game. He would be better off supporting a price structure which permits supplier expansion and insures adequate supply.

More Steel Buying—In the current situation Mr. Kennedy says Westinghouse will stabilize its overall steel inventories in the fourth quarter. Coming after a period of liquidation, this will mean increased buying of steel. But the increase will probably be only enough to bring purchasing in line with consumption.

However, Mr. Kennedy points out that two considerations could change this picture in the direction of inventory buildup. One is increased activity. There have been indications of a significant pickup at Westinghouse.

Some Advance Orders—Another consideration is delivery. Mr. Kennedy warns that steel deliveries do not lengthen by weeks but by months. As much as possible Westinghouse is booking steel several months in advance.

If steel deliveries do lengthen, says Mr. Kennedy, this will not in itself mean larger inventories. But he points out that longer lead times are invariably accompanied by more uncertainty about shipment arrivals. Westinghouse will provide for this by changing the delivery probability factor in its buying formulas. It will provide a bigger safety margin and that means it will be carrying more inventory.

ANDY KENNEDY: Think in terms of value as well as price when you buy.

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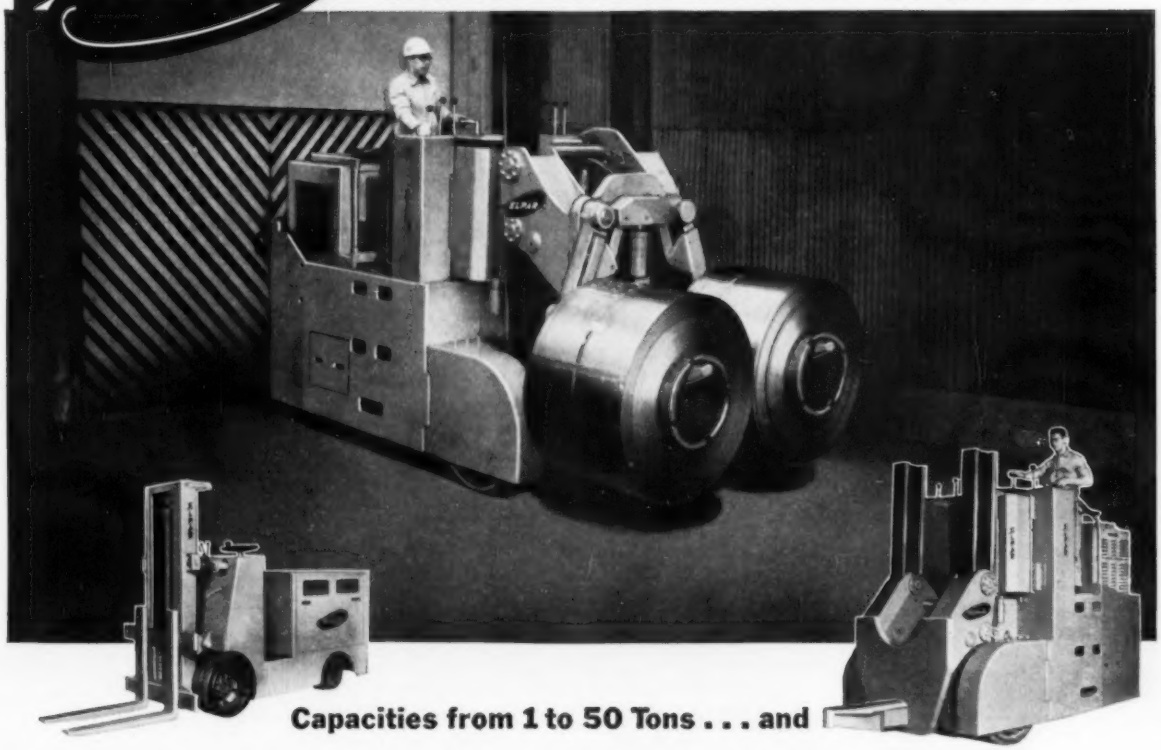

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STEEL PRODUCT MARKETS

Tool Steels Continue Sales Climb

Upturn in tool steel sales which began in July is still gaining ground.

Some believe recovery in that market predicts general industrial improvement by end of the year.

▪ Tool steel sales—widely regarded as a sound economic barometer—are staging a comeback.

They started improving in July when shipments—bucking an expected seasonal downturn—actually climbed above June levels. These July sales gains were then bettered by 20 pct in August. While demand for high speed steels lagged a bit last month, there was a sharp jump in general tool steel orders.

Even the order pattern is encouraging tool steel makers and sellers. It's true users are placing a lot of "rush-rush" orders to fill sagging inventories. But they are doing a lot more than just bolstering stocks. Some mills are filling orders in the 4000-5000 lb range. These are in marked contrast to bookings earlier this year when users were buying in dribs and drabs.

Another optimistic sign in the recent sales upswing: Many orders are for steel which takes two or three months to turn into finished dies. That fall and winter activity in the tool and die industry might reflect a coming broad recovery for business in general.

Composite Price Rise — The IRON AGE Finished Steel Composite price has risen by $4.58 per ton as a result of recent mill price boosts. This is close to the mills' estimate of an average increase of $4.50.

Sheet and Strip — Sheet producers, while predicting a steady gain in shipments from now through October, are keeping their fingers crossed. They have been told by auto steel buyers that big orders are due for next month. Some tonnage has been booked. But the automakers still seem reluctant about placing big orders too far in advance. So mill bookings for October are as yet below expectations.

Both hot and cold-rolled sheet deliveries are stretching out in the **Midwest. Chicago** area mills say cold-rolled is already out to late October or November. And hot-rolled sheet deliveries are expected to increase from 2-4 to 5-6 weeks about the middle of this month. Some mills there will have carryovers from October into November on cold-rolled and galvanized sheet.

Plates — Eastern market for sheared mill plate is at "good levels" according to one large producer. Another mill, Claymont Products Div. of Colorado Fuel and Iron Corp. is operating above 85 pct helped by a large export order for linepipe. In general terms, however, heavy plate sales in that area could stand improvement. Light plate is also slow with one mill able to plan bookings only a week or two ahead.

Chicago mills report new fabricating contracts and added pipeline orders are helping the plate market. One large diameter pipe mill there has backlogs extending through October and November. Narrow plate in the **Chicago** area is on 3-4 week delivery and may move out at least another week.

Structurals—Customers can usually count on getting any standard size in structurals each month, says a large **Eastern** producer. That's because monthly mill rollings include all the popular products. Producers in the area are operating mills at about 50 pct of capacity.

Demand from fabricators is stimulating structural sales in the **Midwest.** Some fabricators are swinging into two-shift operations. Importers are not supplying any foreign-made bar and angle in the **Midwest** and this is encouraging domestic producers.

Wire Products — Bookings of manufacturers wire haven't shown the pickup expected for September. For one **Pittsburgh** area mill orders are still running at August levels. Reluctance on the part of automotive steel buyers is given as one reason for the lack of a pickup. Merchant wire sales are still slow.

Export Price Advance — Increases in export base prices for standard rails, light rails, joint bars and tie plates have been announced by U. S. Steel Export Co. The move reflects recent increases made in these products by domestic producers, including U. S. Steel.

New export base prices, effective Sept. 4, with freight to New York, Baltimore, or Philadelphia are as follows: Standard rails, 61 lbs and over—$118.21 per ton; light rails, 60 lbs and under—$142.21 per ton; joint bars for standard rails—$7.44 per hundredweight; and tie plates—$7.07 per hundredweight.

PURCHASING AGENT'S CHECKLIST

Cost-price squeeze still grips equipment makers. **P. 123**

Steel forecast for next five years. Look for record output in 1959-62, expert says. **P. 137**

Trend to machine tool leasing on the increase. **P. 151**

COMPARISON OF PRICES

(Effective Sept. 9, 1958)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in **Heavy Type**; declines appear in *Italics*.

	Sept. 9 1958	Sept. 2 1958	Aug. 12 1958	Sept. 10 1957
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10¢	5.10¢	4.925¢
Cold-rolled sheets	6.275	6.275	6.275	6.05
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.60
Hot-rolled strip	5.10	5.10	5.10	4.925
Cold-rolled strip	7.425	7.425	7.425	7.17
Plate	5.30	5.30*	5.30*	5.12
Plates, wrought iron	13.55	13.55	13.55	13.15
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$10.30	$10.30	$10.30	$10.30
Tin plates, electro (0.50 lb.)	9.00	9.00	9.00	9.00
Special coated mfg. ternes	9.55	9.55	9.55	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.675¢	5.675¢	5.675¢	5.425¢
Cold finished bar	7.65	7.65	7.65	7.30
Alloy bars	6.725	6.725	6.725	6.475
Structural shapes	5.50	5.50	5.50	5.275
Stainless bars (No. 302)	45.00	45.00	45.00	45.00
Wrought iron bars	14.90	14.90	14.90	14.45
Wire: (per pound)				
Bright wire	8.00¢	8.00¢	8.00¢	7.65¢
Rails: (per 100 lb.)				
Heavy rails	$5.75	$5.525	$5.525	$5.525
Light rails	6.725	6.50	6.50	6.50
Semifinished Steel: (per net ton)				
Rerolling billets	$80.00	$80.00	$80.00	$77.50
Slabs, rerolling	80.00	80.00	80.00	77.50
Forging billets	99.50	99.50	99.50	96.00
Alloy blooms, billets, slabs	119.00	119.00	119.00	114.00
Wire Rods and Skelp (per pound)				
Wire rods	6.40¢	6.40¢	6.40¢	6.15¢
Skelp	5.05	5.05	5.05	4.875
Finished Steel Composite: (per pound)				
Base price	6.196¢	6.188¢	6.188¢	5.967¢

	Sept. 9 1958	Sept. 2 1958	Aug. 12 1958	Sept. 10 1957
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.97	$70.97	$70.97	$70.51
Foundry, Valley	66.50	66.50	66.50	66.50
Foundry, Southern Cin'ti	73.87	73.87	73.87	71.65
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.47	70.47	70.47	70.01
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	66.50
Ferromanganese 74-76 pct Mn, cents per lb‡	12.25	12.25	12.25	12.75
Pig Iron Composite: (per gross ton)				
Pig iron	$66.49	$66.49	$66.49	$66.42
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$44.50	$44.50	$44.50	$50.50
No. 1 steel, Phila. area	39.50	39.50	37.50	47.50
No. 1 steel, Chicago	44.50	44.50	43.50	47.50
No. 1 bundles, Detroit	36.50	37.50	37.50	44.50
Low phos., Youngstown	46.50	46.50	46.00	54.50
No. 1 mach'y cast, Pittsburgh	51.50	51.50	51.50	58.50
No. 1 mach'y cast, Phila.	49.50	49.50	49.50	56.50
No. 1 mach'y cast, Chicago	53.50	53.50	52.50	49.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	$42.83	$42.83	$41.83	$48.50
No. 2 bundles	29.17	29.17	29.83	38.50
Coke Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.50	$14.50	$15.38	$15.38
Foundry coke, prompt	$18-18.50	$18-18.50	$17.50-$19	$17.50-$19
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	26.50	26.50	26.50	27.00
Copper, Lake, Conn.	26.50	26.50	26.50	27.00
Tin, Straits, N. Y.	94.50†	95.75*	95.25	93.00
Zinc, East St. Louis	10.00	10.00	10.00	10.00
Lead, St. Louis	10.80	10.80	10.80	13.80
Aluminum, virgin ingot	26.80	26.80	26.80	28.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	33.00

† Tentative. ‡ Average. * Revised.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Averages of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

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Prices Firm as Trade Builds Inventories

Dealers in most districts can find buyers at lower prices if they want to sell.

But most are holding on to their material in hopes of an upturn.

■ Inventory building continues to be the order of the day in most scrap yards. The market is generally firm, although little material is changing hands.

Dealers who were somewhat disappointed over failure of post-Labor Day orders to come through in volume were not, for the most part, discouraged enough to sell at lower prices. They're hanging on to their scrap in anticipation of a strong fourth quarter.

For many dealers, inventory building has been going on for the past several months. The limit may be near. An October upturn in mill demand for scrap would come none too soon for dealers whose cash and credit are extended to the limit.

The only area of scarcity today exists in industrial scrap, which works to dealer advantage.

Uncertainty in the outcome of auto labor negotiations is casting a pall over the Detroit market and is spreading to Cleveland. An extended auto strike would hurt these markets considerably. In Detroit, the price of No. 1 heavy melting dropped $2 this week. But if the automakers sign union contracts soon, the Detroit market would bounce back overnight.

In general, the outlook for the scrap market is brighter than it has been for some time. The IRON AGE Heavy melting Composite Price is unchanged at $42.83.

Pittsburgh—Lack of heavy buying has eased the market here, but there is still no evidence that dealer grades can be bought for less money. A price equal to $44 for No. 1 heavy melting reportedly failed to interest local sellers and the buyer was forced to go out of the district for scrap. Early lists showed railroad grades running about the same or slightly off last month. A tight supply continues to push stainless scrap prices upward.

Chicago — Dealers and brokers are betting on a very strong October-November and are trying to extend their scrap holdings. Scattered buys pushed a few grades upward, but volume continues low. Even the "weak" grades, turnings and No. 2 bundles, are being held in anticipation of later price rises. News of the Inland steel strike caused a momentary slump of about $1, but the market tightened again almost immediately.

Philadelphia—Scrap can be sold readily here at lower than quoted prices but the trade is holding on to what it has. There's strong feeling that higher prices are coming soon. One mill bought shoveling turnings at $35, or $1 above last week.

New York—The domestic market is quiet but optimism prevails. With export business active, the trade needs only a moderate upswing in mill demand to start a boom rolling. There are no price changes.

Detroit—Post-holiday purchases by consumers gave dealers little cause for optimism. Tonnages were small and prices dipped $1 to $2. Dealers are hoping recent developments in lagging auto contract talks will lead to a quick, peaceful settlement. It would spark the market.

Cleveland—The market apparently hinges on auto labor negotiations and will mark time until settlements. Favorable settlement should boost volume but no price fluctuation is expected. Foundry market is off due to auto uncertainty.

St. Louis—This market is steady with prices unchanged. The trade is looking forward to Sept. 25, when tonnages for October delivery will be placed. In the meantime, dealers are concentrating on building inventories.

Birmingham—The market in this district continues dull. There was a fair amount of buying of cast and some electric furnace bundles moved—all at unchanged prices. But the expected buys of openhearth grades after Labor Day failed to materialize.

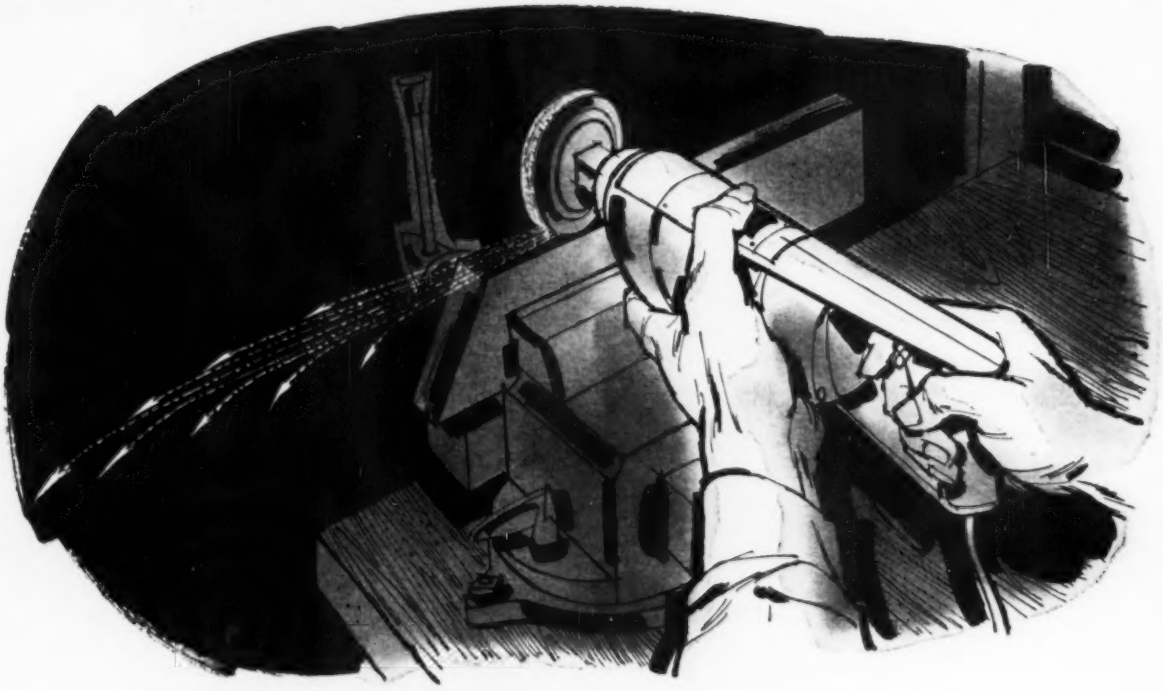
Cincinnati — Prime grades are drying up because of slow industrial production and continued mill demand for the grades. Bundles, however, must go upriver. Price of rails is up because yards are bidding against rerollers for scarce material.

Buffalo—The market is quiet and prices unchanged. Lake shipping of scrap into this area has practically ceased.

Boston—Dealer optimism and resistance to going prices brought on pressure for a $1 increase in primary steelmaking grades. Machine shop turnings, shoveling turnings, and mixed cupola cast also are up. Export is quiet.

West Coast — This market remains at a virtual standstill. Scrap supply is tight and prices are steady. Dealers are looking for the Japanese to buy 30 to 40 thousand tons by Sept. 15.

S-E-G-R-E-G-A-T-E-D SCRAP IS WORTH MORE



In diffused daylight, so that spark characteristics can be accurately observed, hold a sample against a clean grinding wheel revolving at high speed. A definitely orange or straw color with small amounts of red near the wheel and with the carrier lines ending in short bright orange tongues having a slight upward or downward curvature indicates molybdenum high speed tool steel. It is well to have a sample of known analysis for comparison.

Here is how to test for

MOLYBDENUM HIGH SPEED TOOL STEEL

Although molybdenum high speed steel was first developed in 1932, it was the need to conserve tungsten which was scarce during World War II, that started this metal on the road which led it to its present popularity. Molybdenum and tungsten types of high speed steel share most of the same desirable qualities but molybdenum has forged ahead in production largely due to its lower cost.

M2, the general purpose molybdenum high speed steel, (Carbon .80, Chromium 4.00, Molybdenum 5.00, Tungsten 6.00, Vanadium 2.00) which is stocked in almost every warehouse, is noted for its red hardness and wear resistance and is used primarily in the production of cutting tools, saw blades, punches and dies.

To get the maximum value from these high speed steels when they are discarded, it is important that they be segregated. Our personnel, equipment, experience and strategically located facilities are specifically geared to supply you with dependably segregated metals in any required amount. We welcome your inquiry.

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SCRAP PRICES *(Effective Sept. 9, 1958)*

Pittsburgh

No. 1 hvy. melting	$44.00 to $45.00
No. 2 hvy. melting	33.00 to 34.00
No. 1 dealer bundles	44.00 to 45.00
No. 1 factory bundles	48.00 to 49.00
No. 2 bundles	31.00 to 32.00
No. 1 busheling	44.00 to 45.00
Machine shop turn.	20.00 to 21.00
Mixed bor. and ms. turn.	20.00 to 21.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	24.00 to 25.00
Low phos. punch'gs plate	49.00 to 50.00
Heavy turnings	35.00 to 36.00
No. 1 RR hvy. melting	48.00 to 49.00
Scrap rails, random lgth.	54.00 to 55.00
Rails 2 ft and under	57.00 to 58.00
RR steel wheels	52.00 to 53.00
RR spring steel	52.00 to 53.00
RR couplers and knuckles	52.00 to 53.00
No. 1 machinery cast.	51.00 to 52.00
Cupola cast.	44.00 to 45.00
Heavy breakable cast.	42.00 to 43.00
Stainless	
18-8 bundles and solids	225.00 to 230.00
18-8 turnings	120.00
430 bundles and solids	115.00 to 120.00
410 turnings	50.00 to 60.00

Chicago

No. 1 hvy. melting	$44.00 to $45.00
No. 2 hvy. melting	38.00 to 39.00
No. 1 dealer bundles	45.00 to 46.00
No. 1 factory bundles	50.00 to 52.00
No. 2 bundles	31.00 to 32.00
No. 1 busheling	44.00 to 45.00
Machine shop turn.	23.00 to 24.00
Mixed bor. and turn.	24.00 to 25.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	24.00 to 25.00
Low phos. forge crops	54.00 to 55.00
Low phos. punch'gs plate	50.90 to 51.00
Low phos. 3 ft and under	48.00 to 49.00
No. 1 RR hvy. melting	49.00 to 50.00
Scrap rails, random lgth.	54.00 to 55.00
Rerolling rails	64.00 to 65.00
Rails 2 ft and under	60.00 to 61.00
Locomotive tires cut	54.00 to 55.00
Cut bolsters & side frames	51.00 to 52.00
Angles and splice bars	56.00 to 57.00
RR steel bar axles	71.00 to 72.00
RR couplers and knuckles	53.00 to 54.00
No. 1 machinery cast.	53.00 to 54.00
Cupola cast.	47.00 to 48.00
Heavy breakable cast.	41.00 to 42.00
Cast iron brake shoes	43.00 to 44.00
Cast iron wheels	40.00 to 41.00
Malleable	57.00 to 58.00
Stove plate	44.00 to 45.00
Steel car wheels	51.00 to 52.00
Stainless	
18-8 bundles and solids	215.00 to 220.00
18-8 turnings	125.00 to 130.00
430 bundles and solids	115.00 to 120.00
430 turnings	70.00 to 75.00

Philadelphia Area

No. 1 hvy. melting	$39.00 to $40.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 dealer bundles	39.00 to 40.00
No. 2 bundles	24.00 to 25.00
No. 1 busheling	39.00 to 40.00
Machine shop turn.	20.00 to 21.00
Mixed bor. short turn.	20.00 to 21.00
Cast iron borings	20.00 to 21.00
Shoveling turnings	23.00 to 25.00
Clean cast. chem. borings	30.00 to 31.00
Low phos. 5 ft and under	42.00 to 43.00
Low phos. 2 ft and under	43.00 to 44.00
Low phos. punch'gs	43.00 to 44.00
Elec. furnace bundles	40.00 to 41.00
Heavy turnings	34.00 to 35.00
RR steel wheels	44.50 to 45.50
RR spring steel	44.50 to 45.50
Rails 18 in. and under	57.00 to 58.00
Cupola cast.	39.00 to 40.00
Heavy breakable cast.	41.00 to 42.00
Cast iron car wheels	44.00 to 45.00
Malleable	56.00 to 57.00
Unstripped motor blocks	30.00 to 31.00
No. 1 machinery cast.	49.00 to 50.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$38.50 to $39.50
No. 2 hvy. melting	32.50 to 33.50
No. 1 dealer bundles	38.50 to 39.50
No. 2 bundles	25.00 to 26.00
Machine shop turn.	18.00 to 19.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	17.00 to 18.00
Low phos. 18 in. and under	44.00 to 45.00
Rails, random length	46.00 to 47.00
Rails, 18 in. and under	55.00 to 56.00
No. 1 cupola cast.	42.00 to 43.00
Hvy. breakable cast.	36.00 to 37.00
Drop broken cast.	47.00 to 48.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Cleveland

No. 1 hvy. melting	$41.50 to $42.50
No. 2 hvy. melting	33.50 to 34.50
No. 1 dealer bundles	41.50 to 42.50
No. 1 factory bundles	46.00 to 47.00
No. 2 bundles	28.50 to 29.50
No. 1 busheling	41.50 to 42.50
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	22.00 to 23.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	22.00 to 23.00
Cut structural & plates, 2 ft & under	47.00 to 48.00
Drop forge flashings	41.50 to 42.50
Low phos. punch'gs plate	42.50 to 43.50
Foundry steel, 2 ft & under	41.00 to 42.00
No. 1 RR hvy. melting	47.00 to 48.00
Rails 2 ft and under	56.00 to 57.00
Rails 18 in. and under	57.00 to 58.00
Railroad grate bars	18.00 to 19.00
Steel axle turnings	25.00 to 26.00
Railroad cast.	49.00 to 50.00
No. 1 machinery cast.	48.00 to 49.00
Stove plate	44.00 to 45.00
Malleable	61.00 to 62.00
Stainless	
18-8 bundles	195.00 to 200.00
18-8 turnings	105.00 to 110.00
430 bundles	105.00 to 110.00
430 turnings	40.00 to 45.00

Buffalo

No. 1 hvy. melting	$37.00 to $38.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 busheling	36.00 to 37.00
No. 1 dealer bundles	37.00 to 38.00
No. 2 bundles	27.00 to 28.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	18.00 to 19.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	16.00 to 17.00
Low phos. plate	40.00 to 41.00
Structurals and plate, 2 ft and under	45.00 to 46.00
Scrap rails, random lgth.	47.00 to 48.00
Rails 2 ft and under	59.00 to 60.00
RR steel wheels	44.00 to 45.00
RR spring steel	44.00 to 45.00
RR couplers and knuckles	44.00 to 45.00
No. 1 machinery cast.	45.00 to 46.00
No. 1 cupola cast.	41.00 to 42.00

St. Louis

No. 1 hvy. melting	$38.00 to $39.00
No. 2 hvy. melting	36.00 to 37.00
No. 1 dealer bundles	40.00 to 41.00
No. 2 bundles	29.00 to 30.00
Machine shop turn.	16.00 to 17.00
Cast iron borings	18.00 to 19.00
Shoveling turnings	18.00 to 19.00
No. 1 RR hvy. melting	46.00 to 47.00
Rails, random lengths	48.00 to 49.00
Rails, 18 in. and under	53.00 to 54.00
Angles and splice bars	46.00 to 47.00
Std. steel car axles	64.00 to 65.00
RR specialties	47.00 to 48.00
Cupola cast.	48.00 to 49.00
Heavy breakable cast.	38.00 to 39.00
Cast iron brake shoes	38.00 to 39.00
Stove plate	42.00 to 43.00
Cast iron car wheels	40.00 to 41.00
Rerolling rails	60.00 to 61.00
Unstripped motor blocks	39.00 to 40.00

Birmingham

No. 1 hvy. melting	$35.00 to $36.00
No. 2 hvy. melting	30.00 to 31.00
No. 1 dealer bundles	35.00 to 36.00
No. 2 bundles	23.00 to 24.00
No. 1 busheling	35.00 to 36.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	12.00 to 13.00
Electric furnace bundles	39.00 to 40.00
Elec. furnace, 3 ft & under	37.00 to 38.00
Bar crops and plate	46.00 to 47.00
Structural and plate, 2 ft.	44.00 to 45.00
No. 1 RR hvy. melting	39.00 to 40.00
Scrap rails, random lgth.	46.00 to 47.00
Rails, 18 in. and under	51.00 to 52.00
Angles & Splice bars	47.00 to 48.00
Rerolling rails	59.00 to 60.00
No. 1 cupola cast.	53.00 to 54.00
Stove plate	53.00 to 54.00
Charging box cast.	22.00 to 23.00
Cast iron car wheels	39.00 to 40.00
Unstripped motor blocks	42.00 to 43.00

Youngstown

No. 1 hvy. melting	$45.00 to $46.00
No. 2 hvy. melting	37.00 to 38.00
No. 1 dealer bundles	45.00 to 46.00
No. 2 bundles	31.00 to 32.00
Machine shop turn.	20.50 to 21.50
Shoveling turnings	24.50 to 25.50
Cast iron borings	24.50 to 25.50
Low phos. plate	46.00 to 47.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$28.00 to $29.00
No. 2 hvy. melting	24.00 to 25.00
No. 2 dealer bundles	17.00 to 18.00
Machine shop turn.	8.00 to 9.00
Mixed bor. and turn.	11.00 to 12.00
Shoveling turnings	11.00 to 12.00
Clean cast. chem. borings	24.00 to 25.00
No. 1 machinery cast.	37.00 to 38.00
Mixed yard cast.	35.00 to 36.00
Charging box cast.	34.00 to 35.00
Heavy breakable cast.	34.00 to 35.00
Unstripped motor blocks	24.00 to 25.00
Stainless	
18-8 prepared solids	175.00 to 180.00
18-8 turnings	75.00 to 80.00
430 prepared solids	65.00 to 70.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$34.00 to $35.00
No. 2 hvy. melting	24.00 to 25.00
No. 1 dealer bundles	36.00 to 37.00
No. 2 bundles	21.00 to 22.00
No. 1 busheling	34.00 to 35.00
Drop forge flashings	33.00 to 34.00
Machine shop turn.	13.00 to 14.00
Mixed bor. and turn.	14.00 to 15.00
Shoveling turnings	15.00 to 16.00
Cast iron borings	15.00 to 16.00
Low phos. punch'gs plate	35.00 to 36.00
No. 1 cupola cast.	38.00 to 39.00
Heavy breakable cast.	30.00 to 31.00
Mixed cupola cast.	38.00 to 39.00
Automotive cast.	43.00 to 44.00
Stainless	
18-8 bundles and solids	185.00 to 190.00
18-8 turnings	90.00 to 95.00
430 bundles and solids	95.00 to 100.00
410 turnings	20.00 to 25.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$26.00 to $27.00
No. 2 hvy. melting	20.00 to 21.00
No. 1 dealer bundles	26.00 to 27.00
No. 2 bundles	17.00 to 18.00
No. 1 busheling	26.00 to 27.00
Machine shop turn.	8.00 to 9.00
Mixed bor. and short turn.	8.00 to 9.00
Shoveling turnings	10.00 to 11.00
Clean cast. chem. borings	19.00 to 20.00
No. 1 machinery cast.	32.00 to 33.00
Mixed cupola cast.	32.00 to 33.00
Heavy breakable cast.	29.00 to 30.00
Stove plate	30.00 to 32.00
Unstripped motor blocks	22.00 to 23.00

San Francisco

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	28.00
No. 2 bundles	22.00
Machine shop turn.	15.00
Cast iron borings	15.00
No. 1 RR hvy. melting	32.00
No. 1 cupola cast.	45.00

Los Angeles

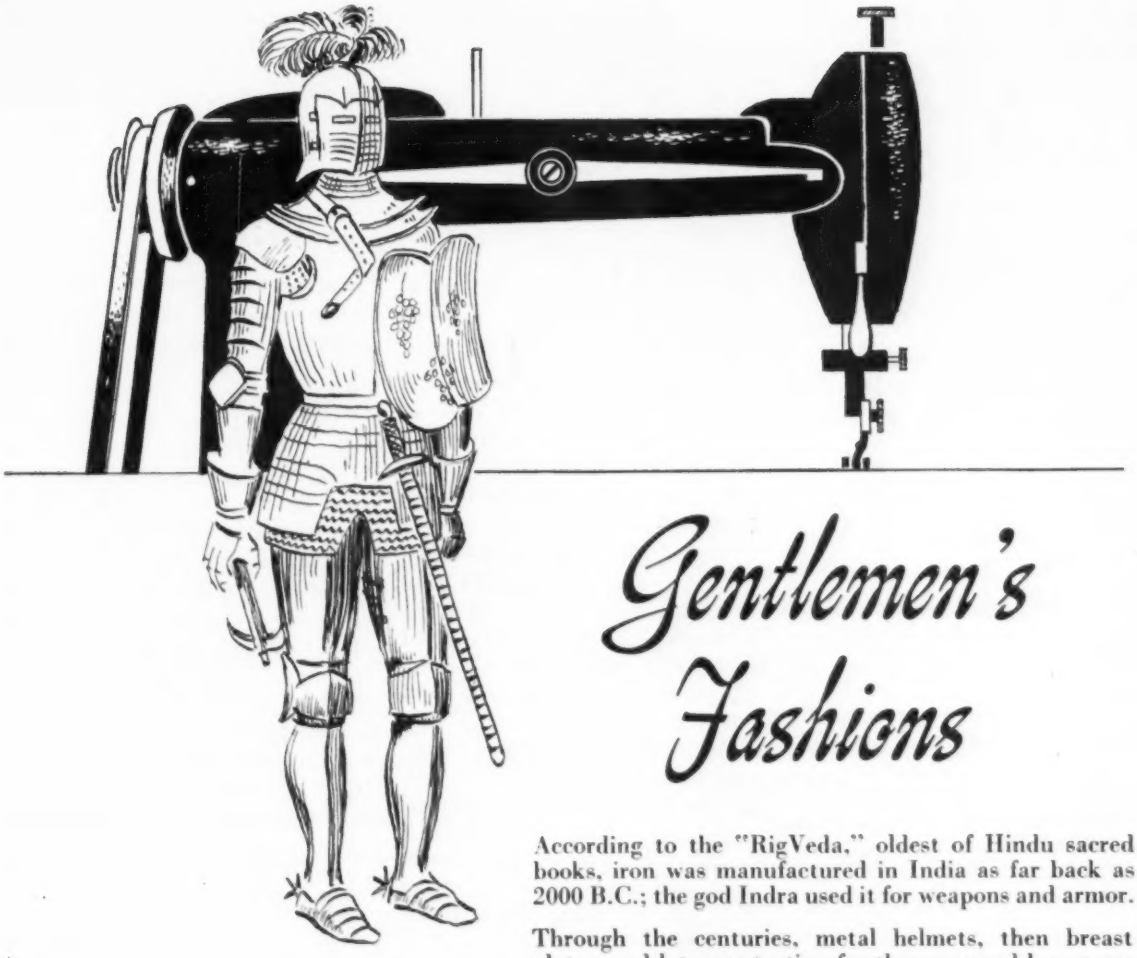
No. 1 hvy. melting	$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	$27.00 to 28.00
No. 2 bundles	17.00
Machine shop turn.	11.00
Shoveling turnings	13.00
Cast iron borings	13.00
Elec. furn 1 ft and under (foundry)	43.00
No. 1 RR hvy. melting	33.00
No. 1 cupola cast.	39.00 to 41.00

Seattle

No. 1 hvy. melting	$30.00
No. 2 hvy. melting	28.00
No. 2 bundles	22.00
No. 1 cupola cast.	36.00
Mixed yard cast.	36.00

Hamilton, Ont.

No. 1 hvy. melting	$30.00
No. 2 hvy. melting	26.00
No. 1 dealer bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Busheling	20.00
Bush., new fact., prep'd	30.00
Bush., new fact., unprep'd	24.00
Machine shop turn.	15.00
Short steel turn.	19.00
Mixed bor. and turn.	15.00
Rails, rerolling	39.00
Cast scrap	$45.00 to 50.00



Gentlemen's Fashions

According to the "RigVeda," oldest of Hindu sacred books, iron was manufactured in India as far back as 2000 B.C.; the god Indra used it for weapons and armor.

Through the centuries, metal helmets, then breast plates, and later protection for the arms and legs, were developed in various forms; and by the time of the Crusades, knights were covered with mail from head to foot. Following the battle of Hastings, the smith in England was treated as a high ranking officer because of his skill in forging arms and armor.

Until the introduction of gunpowder, the hammer, chisel and tongs were major tools in the manufacture of these "fashions" for gentlemen.

Today, men's apparel for battle, business, baseball or bowling has substituted textiles for metals, but thousands of machines are needed for the mills and factories engaged in their manufacture. To provide for such ever-insistent steel requirements, an unfailing supply of scrap must be continuously available.

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of iron or steel scrap

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Nonferrous Tuned To Washington

Important metals industry projects are still pending before Government agencies.

Justice and State departments, and General Services are involved.

▪ The adjournment of Congress has not completely shifted nonferrous interest in Washington. The metals industries still have a number of projects pending in various Government departments.

Here's the picture:

Aluminum — The Justice Dept. has been investigating complaints on an alleged price squeeze of independent extruders by the major producers. Justice has also been looking into the validity of hot metal contracts.

In the former, the contention was that the producers have kept the cost of primary metal raw material up while driving finished extrusion prices down. In the hot metal contracts, independent diecasters claim the difference in the price of molten metal and pig amounts to a discount.

Justice Dept. is saying little except that investigations are still being made. The average case before the Dept. takes from four to six months to investigate. Based primarily on this, observers are predicting some action before the end of the year on both.

Nickel — The Government announced in September 1957 that it would sell its nickel plant at Nicaro, Cuba. To date, it hasn't even called for bids. General Services Administration, in charge of the sale, says it is still preparing "documents and descriptions" necessary before it can call for bids. These, it says, may be ready in from 30 to 60 days. Bids are certain to be asked before the year ends.

Among the problems still being cleared up is the question of Cuban taxes. Observers concede that the transaction was necessarily delayed because of the problems arising from the impending shift from Government to private ownership. But some say the Government cost itself money by fussing too long about royalty rates for Freeport Sulphur Co. ore used at Nicaro. While GSA has been trying to break Freeport's very solid contract the market for nickel sagged badly, making Nicaro a less desirable buy.

It looks like this issue isn't dead yet. The House Government Activities Subcommittee, headed by Rep. Jack Brooks (D., Tex.), says it is still probing the Freeport-Government contract. But no new hearings are in the wind at least for the rest of the year.

Lead and Zinc—All eyes are on the President. Right now the industry says in 1958 it's Ike or nothing. The President held off action on the Tariff Commission recommendation for higher tariffs pending Congressional decision on the Domestic Minerals Stabilization Bill. Following its defeat, he delayed pending talks in London aimed at getting voluntary curb of imports by foreign countries. Now that it is becoming obvious this won't work, observers say Ike will act soon.

In a letter to Rep. Gracie Pfost (D., Idaho), championing the domestic miners' cause, the President reaffirmed the Administration's concern for "the problems of our mineral producers." Reading between the lines many observers expect an increase in tariffs for lead from the current 1¾¢ per lb to about 2⅛¢; for zinc from 7/10¢ per lb to about 1¾¢ per lb.

Copper—Producers haven't quit with the demise of the stockpiling program. Sen. Mike Mansfield (D., Mont.), spearheaded a group of Western congressmen in asking the State Dept. to encourage the Government to stockpile up to 100,000 tons of copper at no less than 27½¢ per lb. The group says that such a program would soon firm the market.

State Dept. says a study of the situation was begun as soon as the Minerals Bill was defeated. But officials say the intent is only to inform Congress "of the outcome" of the probe.

Sen. Mansfield says he is "hopeful," but much of the industry is not. Markets have begun to firm up. Most producers have put back some of the capacity they had idled in the last year.

Tin prices for the week: Sept. 3—95.25; Sept. 4—94.625; Sept. 5—94.625; Sept. 8—94.50; Sept. 9—94.50.*

* Estimate.

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.70	24.00	8/1/58
Aluminum ingot	26.80	26.10	8/1/58
Copper (E)	29.50	25-26.50	7/17/58
Copper (CS)	26 25	26.00	9/4,58
Copper (L)	26.50	25.00	7/17/58
Lead, St. L.	10.55	10.80	8/13/58
Lead, N. Y.	10.75	10.75	8/13/58
Magnesium ingot	38.00	34.00	8/13/58
Magnesium pig	35.25	33.75	8/13/58
Nickel	74.00	64.50	12/6/56
Titanium sponge	185-205	200-250	4/1/58
Zinc, E. St. L.	10.00	10.50	7/1/57
Zinc, N. Y.	10.50	11.00	7/1/57

ALUMINUM: 99% ingot frt allwd. COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colbourne, Canada. ZINC: prime western. TIN: see above; other primary prices, pg. 234.

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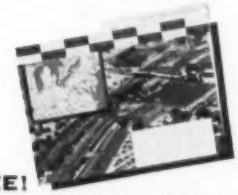

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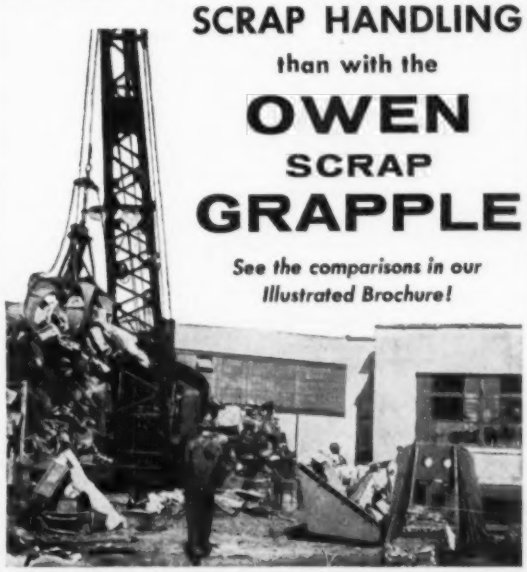

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Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.032	.081	.136-.249	.250-3.
1100, 3003	45.7	43.8	42.8	43.3
5052	53.1	48.4	46.9	45.0
6061-0	50.1	45.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	6063 T-6
6-8	42.7-44.2	51.1-54.8
12-14	42.7-44.2	52.0-56.5
24-26	43.2-44.7	62.8-67.5
36-38	46.7-49.2	86.9-90.5

Screw Machine Stock—2011-T-3

Size*	¼	⅜-⅝	⅝-1	1¼-1½
Price	62.0	61.2	59.7	57.8

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	$1.411	$1.884	$2.353	$2.822
.024 gage	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

Sheet and Plate

Type→ Gage→	.250 3.00	.250-2.00	.188	.081	.032
AZ31B Stand. Grade	.....	67.9	69.0	77.9	108.1
AZ31B Spec.	.....	93.3	95.7	108.7	171.3
Tread Plate	.....	70.6	71.7	.....	.....
Tooling Plate	73.0	.....	.....	.....	.....

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade.. (AZ31C)	69.6	70.7	75.6	89.2
Spec. Grade... (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting) ..... 37.25 (delivered)

AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	126	106	128
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	120	105	121
Seamless tube	157	129	200
Shot, blocks	...	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	49.63	.....	46.88	49.83
Brass, 70/30	43.57	44.11	43.51	46.48
Brass, Low	46.03	46.57	45.97	48.84
Brass, R L	46.89	47.43	46.83	49.70
Brass, Naval	47.83	.....	43.14	51.24
Munts Metal	45.95	.....	41.76	.....
Comm. Bs.	48.30	48.84	48.24	50.86
Mang. Bs.	51.57	.....	45.67	.....
Phos. Bs. 5%	68.59	.....	69.09	.....

Free Cutting Brass Rod 29.28

TITANIUM

(Base prices, f.o.b. mill)

Sheet and strip, commercially pure, $8.50-$10.10; alloy, $15.95; Plate, HR, commercially pure, $6.00-$6.75; alloy, $8.75-$9.50. Wire, rolled and/or drawn, commercially pure, $6.50-$7.00; alloy, $10.00-$11.50; Bar, HR or forged, commercially pure, $5.25-$5.50; alloy, $5.25-$6.35; billets, HR, commercially pure, $4.10-$4.35; alloy, $4.10-$4.20.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex.. 29.50
Beryllium aluminum 5% Be, Dollar per lb contained Be $74.75
Beryllium copper, per lb cont'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $71.50
Bismuth, ton lots ..... $ 2.25
Cadmium, del'd ..... $ 1.55
Calcium, 99.9% small lots ..... $ 4.55
Chromium, 99.8% metallic basis.. $ 1.31
Cobalt, 97-99% (per lb).... $2.00 to $2.07
Germanium, per gm, f.o.b. Miami, Okla., refined ..... 39.50 to 50.00
Gold, U. S. Treas., per troy oz. $35.00
Indium, 99.9%, dollars per troy oz.. $ 2.25
Iridium, dollars per troy oz. ... $70 to $80
Lithium, 98% ..... $11.00 to $14.00
Magnesium, sticks, 100 to 500 lb.... 59.00
Mercury, dollars per 76-lb flask, f.o.b. New York ..... $240 to $244
Nickel oxide sinter at Buffalo, N. Y., or other U. S. points of entry, contained nickel 69.60
Palladium, dollars per troy oz... $17 to $19
Platinum, dollars per troy oz... $59 to $65
Rhodium ..... $120.00 to $125.00
Silver ingots (¢ per troy oz.) 88.625
Thorium, per kg. $43.00
Vanadium ..... $ 3.45
Zirconium sponge ..... $ 5.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
No. 115 ..... 27.00
No. 120 ..... 26.25
No. 123 ..... 25.75
80-10-10 ingot
No. 305 ..... 31.25
No. 315 ..... 29.25
88-10-2 ingot
No. 210 ..... 38.25
No. 215 ..... 34.00
No. 245 ..... 30.75
Yellow ingot
No. 405 ..... 22.75
Manganese bronze
No. 421 ..... 24.50

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
0.30 copper max. 24.75-25.00
0.60 copper max. 24.50-24.75
Piston alloys (No. 122 type).. 24.25-25.25
No. 12 alum. (No. 2 grade)... 21.50-22.00
108 alloy 22.00-22.50
195 alloy 25.00-26.00
13 alloy (0.60 copper max.)... 24.25-24.75
AXS-679 (1 pct zinc) 21.75-22.25

(Effective Sept. 8, 1958)

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97½% 22.50-23.50
Grade 2—92-95% 21.25-22.25
Grade 3—90-92% 20.25-21.25
Grade 4—85-90% 17.50-18.50

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	22½	21¾
Yellow brass	17	15¼
Red brass	19¾	19
Comm. bronze	20⅜	19⅞
Mang. bronze	15⅞	14⅞
Yellow brass rod ends	16¾	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 22¼
No. 2 copper wire 20¾
Light copper 18½
*Refinery brass 20¼
Copper bearing material 18
* Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 22¼
No. 2 copper wire 20¾
Light copper 18½
No. 1 composition 18½
No. 1 comp. turnings 18
Hvy. yellow brass solids 13½
Brass pipe 15
Radiators 15

Aluminum

Mixed old cast. ..... 12 —12½
Mixed new clips ..... 15 —16
Mixed turnings, dry ..... 13 —14

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire ..... 19¼—19¾
No. 2 copper wire ..... 17¼—17¾
Light copper ..... 15¼—15¾
Auto radiators (unsweated). 11½—12
No. 1 composition ..... 15½—16
No. 1 composition turnings.. 14½—15
Cocks and faucets ..... 12¾—13
Clean heavy yellow brass ... 10¾—11¼
Brass pipe ..... 12¾—13¼
New soft brass clippings .... 13¼—13¾
No. 1 brass rod turnings .... 10¾—11¼

Aluminum

Alum. pistons and struts .... 5¼— 5¾
Aluminum crankcases ..... 9¼— 9¾
1100 (2S) aluminum clippings 12¾—13¼
Old sheet and utensils ..... 9¼— 9¾
Borings and turnings ..... 6¼— 6¾
Industrial castings ..... 9¼— 9¾
2024 (24S) clippings ..... 10¾—11¼

Zinc

New zinc clippings ..... 4 — 4½
Old zinc ..... 3 — 3¼
Zinc routings ..... 1¾— 2
Old die cast scrap ..... 1½— 1¾

Nickel and Monel

Pure nickel clippings 42-45
Clean nickel turnings 37-40
Nickel anodes 42-45
Nickel rod ends 42-45
New Monel clippings 28-29
Clean Monel turnings 20-23
Old sheet Monel 25.26
Nickel silver clippings, mixed 18
Nickel silver turnings, mixed 15

Lead

Soft scrap lead ..... 6½— 6¾
Battery plates (dry) ..... 2 — 2¼
Batteries, acid free ..... 1½— 1¾

Miscellaneous

Block tin ..... 75 —76
No. 1 pewter ..... 59 —60
Auto babbitt ..... 39 —40
Mixer common babbitt ..... 9½—10
Solder joints ..... 13¾—13¾
Siphon tops 42
Small foundry type ..... 10½—10¾
Monotype ..... 10¼—10½
Lino. and stereotype ..... 9¼— 9½
Electrotype ..... 8¼— 8½
Hand picked type shells .... 6¾— 6¾
Lino. and stereo. dross ..... 2¼— 2½
Electro dross ..... 1¾— 2

STEEL

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PILING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$119.00 *B3*		5.55 *B3*	8.10 *B3*	5.55 *B3*						
	Buffalo, N. Y.	$80.00 *R3, B3*	$99.50 *R3, B3*	$119.00 *R3, B3*	6.50 *B3*	5.55 *B3*	8.10 *B3*	5.55 *B3*	5.10 *B3, R3*	7.425 *S10, R7*	7.575 *B3*			
	Phila., Pa.									7.875 *P15*				
	Harrison, N. J.													15.55 *C11*
	Conshohocken, Pa.		$104.50 *A2*	$126.00 *A2*					5.15 *A2*		7.575 *A2*			
	New Bedford, Mass.									7.875 *R6*				
	Johnstown, Pa.	$80.00 *B3*	$99.50 *B3*	$119.00 *B3*		5.55 *B3*	8.10 *B5*							
	Boston, Mass.									7.975 *T8*				
	New Haven, Conn.									7.875 *D1*				
	Baltimore, Md.									7.425 *T8*				15.90 *T8*
	Phoenixville, Pa.					5.55 *P2*		5.55 *P2*						
	Sparrows Pt., Md.								5.10 *B3*		7.575 *B3*			
	New Britain, Bridgeport, Wallingford, Conn.			$119.00 *N8*						7.875 *W1,S7*				
	Pawtucket, R. I. Worcester, Mass.									7.975 *N7, A5*				15.90 *N7* 15.70 *T8*
MIDDLE WEST	Alton, Ill.								5.30 *L1*					
	Ashland, Ky.								5.10 *A7*					
	Canton-Massillon, Dover, Ohio		$102.00 *R3*	$119.00 *R3,* $114.00 *T5*						7.425 *G4*		10.80 *G4*		15.50 *C11*
	Chicago, Ill. Franklin Park, Ill. Evanston, Ill.	$80.00 *U1, R3*	$99.50 *U1, R3,W8*	$119.00 *U1, R3,W8*	6.50 *U1*	5.50 *U1, W8,P15*	8.05 *U1, Y1,W8*	5.50 *U1*	5.10 *W8, N4,A1*	7.525 *A1,T8* *M8*	7.575 *W8*		8.40 *W8, S9,I3*	15.55 *A1, S9,G4,T8*
	Cleveland, Ohio									7.425 *A5,J3*		10.75 *A5*	8.40 *J3*	
	Detroit, Mich.			$119.00 *R5*					5.10 *G3, M2*	7.425 *M2, D1,D2,P11*	7.575 *G3*	10.80 *D2*		
	Anderson, Ind.									7.425 *G4*				
	Gary, Ind. Harbor, Indiana	$80.00 *U1*	$99.50 *U1*	$119.00 *U1, Y1*		5.50 *U1, I3*	8.05 *U1, J3*	5.50 *I3*	5.10 *U1, I3,Y1*	7.425 *Y1*	7.575 *U1, I3,Y1*	10.90 *Y1*	8.40 *U1, Y1*	
	Sterling, Ill.	$80.00 *N4*				5.50 *N4*			5.20 *N4*					
	Indianapolis, Ind.									7.575 *R5*				15.70 *R5*
	Newport, Ky.								5.10 *A9*				8.40 *A9*	
	Niles, Warren, Ohio Sharon, Pa.		$99.50 *S1, C10*	$119.00 *C10,S1*					5.10 *R3, S1*	7.425 *R3, T4,S1*	7.575 *R3, S1*	10.80 *S1, R3*	8.40 *S1*	15.55 *S1*
	Owensboro, Ky.	$80.00 *G5*	$99.50 *G5*	$119.00 *G5*										
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Aliquippa, Pa.	$80.00 *U1, P6*	$99.50 *U1, C11,P6*	$119.00 *U1, C11,B7*	6.50 *U1*	5.50 *U1, J3*	8.05 *U1, J3*	5.50 *U1*	5.10 *P6*	7.425 *J3,B4*			8.40 *S9*	15.55 *S9*
	Wairton, Wheeling, Follansbee, W. Va.				6.50 *U1, W3*	5.50 *W3*		5.50 *W3*	5.10 *W3*	7.425 *W3,F3*	7.575 *W3*	10.80 *W3*		
	Youngstown, Ohio	$80.00 *R3*	$99.50 *Y1, C10*	$119.00 *Y1*			8.05 *Y1*		5.10 *U1*	7.425 *Y1,R5*	7.575 *U1, Y1*	10.80 *Y1*	8.40 *U1, Y1*	15.55 *R5, Y1*
WEST	Fontana, Cal.	$90.50 *K1*	$109.00 *K1*	$140.00 *K1*		6.30 *K1*	8.85 *K1*	6.45 *K1*	5.85 *K1*	9.275 *K1*				
	Geneva, Utah		$99.50 *C7*			5.50 *C7*	8.05 *C7*							
	Kansas City, Mo.					5.60 *S2*	8.15 *S2*						8.65 *S2*	
	Los Angeles, Torrance, Cal.		$109.00 *B2*	$139.00 *B2*		6.20 *C7, B2*	8.75 *B2*		5.85 *C7, B2*	9.325 *J3* 9.30 *C1*			9.60 *B2*	17.75 *J3*
	Minnequa, Colo.					5.80 *C6*			6.20 *C6*	9.375 *C6*				
	Portland, Ore.					6.25 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$109.00 *B2*			6.15 *B2*	8.70 *B2*		5.85 *C7, B2*					
	Seattle, Wash.		$113.00 *B2*			6.25 *B2*	8.80 *B2*		6.10 *B2*					
SOUTH	Atlanta, Ga.					5.70 *A8*			5.10 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$80.00 *T2*	$99.50 *T2*			5.50 *T2* R3, C16	8.05 *T2*		5.10 *T2, R3,C16*		7.575 *T2*			
	Houston, Lone Star Texas		$104.50 *S2*	$124.00 *S2*		5.60 *S2*	8.15 *S2*						8.65 *S2*	

(Effective Sept. 8, 1958)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras applv.

		SHEETS								WIRE ROD	TINPLATE†		BLACK PLATE
		Hot rolled 18 ga. & hvyr.	Cold-rolled	Galvanized (Hot-dipped)	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* 1.25-lb. base box	Electro* 0.25-lb. base box	Holloware Enameling 29 ga.
EAST	Buffalo, N. Y.	5.10 *B3*	6.275 *B3*				7.525 *B3*	9.275 *B3*		6.40 *W6*	† Special coated mfg. terne deduct 50¢ from 1.25-lb. coke base box price. Can-making quality blackplate 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢. ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb./0.25 lb. add 65¢.		
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	5.15 *A2*	6.325 *A2*				7.575 *A2*						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.40 *B3*			
	Fairless, Pa.	5.15 *U1*	6.325 *U1*				7.575 *U1*	9.775 *U1*			$10.15 *U1*	$8.85 *U1*	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	5.10 *B3*	6.275 *B3*	6.875 *B3*			7.525 *B3*	9.275 *B3*,	10.025 *B3*	6.50 *B3*	$10.15 *B3*	$8.85 *B3*	
	Worcester, Mass.									6.70 *A5*			
	Trenton, N. J.												
MIDDLE WEST	Alton, Ill.									6.60 *L1*			
	Ashland, Ky.	5.10 *A7*		6.875 *A7*	6.775 *A7*								
	Canton-Massillon, Dover, Ohio			6.875 *R1, R3*									
	Chicago, Joliet, Ill.	5.10 *W8, A1*					7.525 *U1, W8*			6.40 *A5, R3, W8*			
	Sterling, Ill.									6.50 *N4, K2*			
	Cleveland, Ohio	5.10 *R3, J3*	6.275 *R3, J3*	7.65 *R3**	6.775 *R3*		7.525 *R3, J3*	9.275 *R3 J3*		6.40 *A5*			
	Detroit, Mich.	5.10 *G3, M2*	6.275 *G3, M2*				7.525 *G3*	9.275 *G3*					
	Newport, Ky.	5.10 *A1*	6.275 *A1*										
	Gary, Ind. Harbor, Indiana	5.10 *U1, I3, Y1*	6.275 *U1, I3, Y1*	6.875 *U1, I3*	6.775 *U1, I3, Y1*	7.225 *U1*	7.525 *U1, Y1, I3*	9.275 *U1, Y1*		6.40 *Y1*	$10.05 *U1, Y1*	$8.75 *I3, U1, Y1*	7.50 *U1, Y1*
	Granite City, Ill.	5.20 *G2*	6.375 *G2*	6.975 *G2*	6.875 *G2*							$8.85 *G2*	7.60 *G2*
	Kokomo, Ind.			6.975 *C9*						6.50 *C9*			
	Mansfield, Ohio	5.10 *E2*	6.275 *E2*			7.225 *E2*							
	Middletown, Ohio		6.275 *A7*	6.875 *A7*	6.775 *A7*	7.225 *A7*							
	Niles, Warren, Ohio Sharon, Pa.	5.10 *R3, N3, S1*	6.275 *R3*	6.875 *R3* 7.65 *R3**	6.775 *N3, S1*	7.225 *N3, S1*, R3*	7.525 *R3, S1*	9.275 *S1, R3*				$8.75 *R3*	
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Donora, Pa. Aliquippa, Pa.	5.10 *U1, J3, P6*	6.275 *U1, J3, P6*	6.875 *U1, J3*	6.775 *U1*		7.525 *U1, J3*	9.275 *U1, J3*	10.025 *U1, J3*	6.40 *A5, J3, P6*	$10.05 *W5, J3*	$8.75 *U1, J3*	7.50 *U1 J3*
	Portsmouth, Ohio	5.10 *P7*	6.275 *P7*							6.48 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	5.10 *W3, W5*	6.275 *W3, F3, W5*	6.875 *W3, W5* 7.50 *W3**		7.225 *W3, W5*	7.525 *W3*	9.275 *W3*			$10.05 *W5, W3*	$8.75 *W5, W3*	7.50 *W5*
	Youngstown, Ohio	5.10 *U1, Y1*	6.275 *Y1*	7.50 *J3**	6.775 *Y1*		7.525 *Y1*	9.275 *Y1*		6.40 *Y1*			
WEST	Fontana, Cal.	5.85 *K1*	7.525 *K1*				8.275 *K1*	10.575 *K1*			$10.50 *K1*	$9.50 *K1*	
	Geneva, Utah	5.20 *C7*											
	Kansas City, Mo.									6.65 *S2*			
	Los Angeles, Torrance, Cal.									7.20 *B2*			
	Minnequa, Colo.									6.65 *C6*			
	San Francisco, Niles, Pittsburgh, Cal.	5.80 *C7*	7.225 *C7*	7.625 *C7*						7.20 *C7*	$10.80 *C7*	$9.50 *C7*	
SOUTH	Atlanta, Ga												
	Fairfield, Ala. Alabama City, Ala.	5.10 *T2, R3*	6.275 *T2, R3*	6.875 *T2, R3*	6.775 *T2*					6.40 *T2, R3*	$10.15 *T2*	$8.85 *T2*	
	Houston, Tex.									6.65 *S2*			

*Electrogalvanized sheets

(Effective Sept. 8, 1958)

*7.425 at Sharon-Niles is 7.225

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				6.725 *B3*	9.025 *B3*	8.30 *B3*					
	Buffalo, N. Y.	5.675 *R3,B3*	5.675 *R3,B3*	7.70 *B5*	6.725 *B3,R3*	9.025 *B3,B5*	8.30 *B3*	5.30 *B3*				8.00 *W6*
	Claymont, Del.							5.30 *C4*		7.50 *C4*	7.95 *C4*	
	Coatesville, Pa.							5.30 *L4*		7.50 *L4*	7.95 *L4*	
	Conshohocken, Pa.							5.30 *A2*	6.375 *A2*	7.50 *A2*	7.95 *A2*	
	Harrisburg, Pa.							5.30 *P2*	6.475 *P2*			
	Milton, Pa.	5.825 *M7*	5.825 *M7*									
	Hartford, Conn.			8.15 *R3*		9.325 *R3*						
	Johnstown, Pa.	5.675 *B3*	5.675 *B3*		6.725 *B3*		8.30 *B3*	5.30 *B3*		7.50 *B3*	7.95 *B3*	8.00 *B3*
	Fairless, Pa.	5.825 *U1*	5.825 *U1*		6.875 *U1*							
	Newark, N. J. Camden, N. J.			8.10 *W10, P10*		9.20 *W10, P10*						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 *W10* 8.15 *J3*	6.80 *N8*	9.175 *N8*						
	Sparrows Pt., Md.		5.675 *B3*					5.30 *B3*		7.50 *B3*	7.95 *B3*	8.10 *B3*
	Palmer, Worcester, Readville, Mass. Mansfield, Mass.			8.20 *B5, C14*		9.325 *A5,B5*						8.30 *A5, W6*
	Spring City, Pa.			8.10 *K4*		9.20 *K4*						
MIDDLE WEST	Alton, Ill.	5.675 *L1*										8.20 *L1*
	Ashland, Newport, Ky.							5.30 *A7,A9*		7.50 *A9*		
	Canton, Massillon, Mansfield, Ohio	6.15* *R3*		7.65 *R3,R2*	6.725 *R3,* 6.475 *T5*	9.025 *R3,R2,* 8.775 *T5*		5.30 *E2*				
	Chicago, Joliet, Waukegan, Ill. Harvey, Ill.	5.675 *U1,R3, W8,N4,P13*	5.675 *U1,R3, N4,P13,W8*	7.65 *A5, W10,W8, B5,L2,N9*	6.725 *U1,R3, W8*	9.025 *A5, W10,W8, L2,N8,B5*	8.30 *U1,W8, R3*	5.30 *U1,A1, W8,13*	6.375 *U1*	7.50 *U1, W8*	7.95 *U1, W8*	8.00 *A5,R3, W8,N4, K2,W7*
	Cleveland, Ohio Elyria, Ohio	5.675 *R3*	5.675 *R3*	7.65 *A5,C13, C18*		9.025 *A5, C13,C18*	8.30 *R3*	5.30 *R3,J3*	6.375 *J3*		7.95 *R3,J3*	8.00 *A5, C13,C18*
	Detroit, Mich.	5.675 *G3*	5.675 *G3*	7.90 *P3* 7.85 *P8,B5* 7.65 *R5*	6.725 *R5,G3*	9.025 *R5* 9.225 *B5,P3, P8*	8.30 *G3*	5.30 *G3*		7.50 *G3*	7.95 *G3*	
	Duluth, Minn.											8.00 *A5*
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 *U1,I3, Y1*	5.675 *U1,I3, Y1*	7.65 *R3,J3*	6.725 *U1,I3, Y1*	9.025 *R3,M4*	8.30 *U1,Y1*	5.30 *U1,I3 Y1*	6.375 *J3, I1*	7.50 *U1, Y1*	7.95 *U1, Y1,I3*	8.10 *M4*
	Granite City, Ill.							5.40 *G2*				
	Kokomo, Ind.		5.775 *C9*									8.10 *C9*
	Sterling, Ill.	5.775 *N4*	5.775 *N4*					5.30 *N4*				8.10 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.65 *C10*	6.725 *C10,S1*	9.025 *C10*	7.925 *S1*	5.30 *R3,S1*		7.50 *S1*	7.95 *R3, S1*	
	Owensboro, Ky.	5.675 *G5*			6.725 *G5*							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 *U1,J3*	5.675 *U1,J3*	7.65 *A5,B4, R3,J3,C11, W10,S9,C8, M9*	6.725 *U1,J3, C11,B7*	9.025 *A5, W10,R3,S9, C11,C8,M9*	8.30 *U1,J3*	5.30 *U1, J3*	6.375 *U1*	7.50 *U1, J3,B7*	7.95 *U1, J3,B7*	8.00 *A5 J3,P6*
	Portsmouth, Ohio											8.00 *P7*
	Weirton, Wheeling, Follansbee, W. Va.							5.30 *W5*				
	Youngstown, Ohio	5.675 *U1,R3, Y1*	5.675 *U1,R3, Y1*	7.65 *A1,Y1, F2*	6.725 *U1,Y1*	9.025 *Y1,F2*	8.30 *U1,Y1*	5.30 *U1, R3,Y1*		7.50 *Y1*	7.95 *U1,Y1*	8.00 *Y1*
WEST	Emeryville, Cal. Fontana, Cal.	6.425 *J5* 6.375 *K1*	6.425 *J5* 6.375 *K1*		7.775 *K1*		8.625 *K1*	6.10 *K1*		8.30 *K1*	8.75 *K1*	
	Geneva, Utah							5.30 *C7*			7.95 *C7*	
	Kansas City, Mo.	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*					8.25 *S2*
	Los Angeles, Torrance, Cal.	6.375 *C7,B2*	6.375 *C7,B2*	9.10 *R3,P14, S12*	7.775 *B2*	11.00 *P14, S12*	8.625 *B2*					8.95 *B2*
	Minnequa, Colo.	6.125 *C6*	6.125 *C6*					6.15 *C6*				8.25 *C6*
	Portland, Ore.	6.425 *O2*	6.425 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	6.375 *C7* 6.425 *B2*	6.375 *C7* 6.425 *B2*				8.675 *B2*					8.95 *C7,C6*
	Seattle, Wash.	6.425 *B2,N6*	6.425 *B2*				8.675 *B2*	6.20 *B2*		8.40 *B2*	8.85 *B2*	
SOUTH	Atlanta, Ga.	5.875 *A8*	5.675 *A8*									8.00 *A8*
	Fairfield, Ala. City, Birmingham, Ala.	5.675 *T2,R3, C16*	5.675 *T2,R3, C16*	8.25 *C16*			8.30 *T2*	5.30 *T2, R3*			7.95 *T2*	8.00 *T2,R3*
	Houston, Ft. Worth, Lone Star, Tex.	5.925 *S2*	5.925 *S2*		6.975 *S2,*		8.55 *S2*	5.40 *S2*		7.60 *S2*	8.05 *S2*	8.25 *S2*

† Merchant Quality—Special Quality 35¢ higher. (Effective Sept. 8, 1958) * Special Quality.

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Products Dept., Claymont, Del.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C17 Chester Blast Furnace, Inc., Chester, Pa.
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.

D1 Detroit Steel Corp., Detroit
D2 Dearborn Div., Sharon Steel Corp.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire-Reeves Steel Corp., Mansfield, O.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owenboro, Ky.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Evanston, Ill.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N3 Niles Rolling Mill Div., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Jones & Laughlin Steel Corp., Stainless and Strip Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham
S12 Sierra Drawn Steel Corp., Los Angeles, Calif.

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.

STANDARD T. & C.	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½ In.		3 In.		3½-4 In.	
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Youngstown *R3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fontana *K1*	*10.75	*26.00	*7.75	*22.00	*4.25	*17.50	*1.75	*16.75	*1.25	*15.75	*0.75	*15.25	0.75	*15.50								
Pittsburgh *J3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Alton, Ill. *L1*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Sharon *M3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fairless *N2*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Pittsburgh *N1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Wheeling *W5*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Wheatland *W4*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Youngstown *Y1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Indiana Harbor *Y1*	1.25	*14.0	4.25	*10.0	7.75	*5.50	10.25	*4.75	10.75	*3.75	11.25	*3.25	12.75	*3.50								
Lorain *N2*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Youngstown *R3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Fairless *N2*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Fontana *K1*	*6.25		*2.25		0.75		1.25		1.75		2.25		2.75									
Pittsburgh *J3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Alton, Ill. *L1*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Sharon *M3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Pittsburgh *N1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Wheeling *W5*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Wheatland *W4*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Youngstown *Y1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Indiana Harbor *Y1*	5.75	*8.0	9.75	*4.0	12.75	0.50	13.25	*0.75	13.78	0.25	14.25	0.75	14.75	*0.50								
Lorain *N2*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50

Threads only, buttweld and seamless 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 10¢ per lb.

(Effective Sept. 8, 1958)

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.84	T-1
18	4	1	—	5	2.545	T-4
18	4	2	—	—	2.005	T-2
1.5	4	1.5	8	—	1.20	M-1
6	4	3	6	—	1.59	M-3
6	4	2	5	—	1.345	M-2
High-carbon chromium					.955	D-3, D-5
Oil hardened manganese					.505	O-2
Special carbon					.38	W-1
Extra carbon					.38	W-1
Regular carbon					.325	W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

	Cladding	Plate (*L4, C4, A3, J2*) 10 pct	Plate (*L4, C4, A3, J2*) 15 pct	Plate (*L4, C4, A3, J2*) 20 pct	Sheet (*I2*) 20 pct
Stainless Type	302				37.50
	304	28.80	31.55	34.30	40.00
	316	42.20	46.25	50.25	58.75
	321	34.50	37.75	41.05	47.25
	347	40.80	44.65	48.55	57.00
	405	24.60	26.90	29.25	.....
	410	22.70	24.85	27.00	.....
	430	23.45	25.65	27.90	.....

CR Strip (S9) Copper, 10 pct, 2 sides, 38.75; 1 side, 33.10.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	5.75	6.725	7.25			15.35
Cleveland *R3*				10.10		
So. Chicago *R3*						
Ensley *T2*	5.75	6.725		10.10	6.875	
Fairfield *T2*		6.725			6.875	
Gary *U1*	5.75					
Huntington *C16*		6.50		10.10		
Ind. Harbor *Y1*						
Johnstown *B3*		6.725				
Joliet *U1*			7.25	10.10		15.35
Kansas City *S2*					6.875	
Lackawanna *B3*	5.75	6.725	7.25			15.35
Lebanon *B3*			7.25	10.10	6.60	14.75
Minnequa *C6*	5.525	7.00	6.975			14.75
Pittsburgh *P5*				10.10		
Pittsburgh *J3*					6.75	15.85
Seattle *B2*					6.875	
Steelton *B3*	5.75		7.25	10.10		
Struthers *Y1*					6.75	
Torrance *C7*						
Williamsport *S5*		6.50		10.10		
Youngstown *R3*						

COKE

	Net-Ton
Furnace, beehive (f.o.b.) Connellsville, Pa.	$14.50
Foundry, beehive (f.o.b.)	$18.00 to $18.50
Foundry oven coke	
Buffalo, del'd	$31.75
Detroit, f.o.b.	30.50
New England, del'd	31.55
Kearney, N. J., f.o.b.	29.75
Philadelphia, f.o.b.	29.50
Swedeland, Pa., f.o.b.	29.50
Painesville, Ohio, f.o.b.	30.50
Erie, Pa., f.o.b.	30.50
Cleveland, del'd	32.65
Cincinnati, del'd	31.84
St. Paul, f.o.b.	29.75
St. Louis, f.o.b.	31.50
Birmingham, f.o.b.	28.85
Milwaukee, f.o.b.	30.50
Neville, Is., Pa.	29.25

LAKE SUPERIOR ORES

51.50% Fe natural content, delivered lower Lake ports. Prices for 1958 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Cold-Reduced (Coiled or Cut Length) Fully Processed
Field		9.875	
Armature	11.70	11.20	11.70
Elect.	12.40	11.90	12.40
Special Motor		12.475	
Motor	13.55	13.05	13.55
Dynamo	14.65	14.15	14.65
Trans. 72	15.70	15.20	15.70
Trans. 65	16.30		
		Grain Oriented	
Trans. 58	16.80	Trans. 80	19.70
Trans. 52	17.85	Trans. 73	20.20
		Trans. 66	20.70

Producing points: Beech Bottom (*W5*); Brackenridge (*A3*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*A9*); Niles, O. (*N3*); Vandergrift (*U1*); Warren, O. (*R3*); Zanesville, Butler (*A7*).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (In.)	Length (In.)	Price	CARBON* Diam. (In.)	Length (In.)	Price
24	84	26.00	40	100,110	10.70
20	72	25.25	35	110	10.70
18	72	25.75	30	110	10.85
14	72	25.75	24	72 to 84	11.25
12	72	26.25	20	90	11.00
10	60	28.00	17	72	11.40
10	48	28.50	14	72	11.85
7	60	28.25	12	60	12.95
6	60	31.50	10	60	13.00
4	40	35.00	8	60	13.30
3	40	37.00			
2½	30	39.25			
2	24	60.75			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5.00)	$135.00
No. 1 Ohio	120.00
Sec. Quality, Pa., Md., Ky., Mo., Ill.	120.00
No. 2 Ohio	103.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $2.00)	21.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$150.00
Childs, Hays, Pa.	155.00
Chicago District	160.00
Western Utah	175.00
California	180.00
Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	157.00-160.00
Silica cement, net ton, bulk, Latrobe	28.50
Silica cement, net ton, bulk, Chicago	25.50
Silica cement, net ton, bulk, Ensley, Ala.	26.50
Silica cement, net ton, bulk, Mt. Union	24.50
Silica cement, net ton, bulk, Utah and Calif.	37.00

Chrome Brick

Per net ton

Standard chemically bonded, Balt.	$105.00
Standard chemically bonded, Curtiner, Calif.	115.00
Burned, Balt.	99.00

Magnesite Brick

Standard Baltimore	$131.00
Chemically bonded, Baltimore	116.00

Grain Magnesite

St. ⅜ to ½-in. grains

Domestic, f.o.b. Baltimore in bulk.	$73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in bulk	46.00
in sacks	52.00-54.00

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in: Pa., W. Va., Ohio	$16.75
Midwest	17.00
Missouri Valley	15.00

(Effective Sept. 8, 1958)

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails Col	Woven Wire Fence Col	"Y" Fence Posts Col	Single Loop Bale Ties Col	Galv. Barbed and Twisted Barbless Wire Col	Merch. Wire Am'ld ¢/lb.	Merch. Wire Galv. ¢/lb.
Alabama City *R3*	173	187		212	193	9.00	9.55
Aliquippa *J3****	173	190			190	9.00	9.675
Atlanta *A8***	175	192		214	198	8.75	9.425
Bartonville *K2***	175	192	178	214	198	9.10	9.775**
Buffalo *W6*						9.00	9.55*
Chicago *N4****	173	190	172	212	196	8.65	9.325
Chicago *R3*						9.00	9.55
Cleveland *A6*							
Cleveland *A5*						9.00	
Crawf'dav. *M4***	175	192		214	198	8.75	9.425
Donora, Pa. *A5*	173	187		212	193	9.00	9.55
Duluth *A5*	173	187		212	193	9.00	9.55
Fairfield, Ala. *T2*	173	187		212	193	9.00	9.55
Galveston *D4*	9.10‡						
Houston *S2*	178	192		217	198	9.25	9.80†
Jacksonville *M4*	184-1	197		219	203	9.00	9.675
Johnstown *B3***	173	190	172		196**	8.65	9.325**
Joliet, Ill. *A5*	173	187		212	193	9.00	9.55
Kokomo *C9**	175	189		214	195*	9.10	9.65*
L. Angeles *B2****						9.95	10.625
Kansas City *S2**	178	192		217	198*	9.25	9.80†
Minnequa *C6†*	178	192	177	217	198†	9.25	9.80†
Monessen *P6*					193	8.65	9.20
Palmer, Mass. *W6*						9.30	9.85*
Pittsburg, Cal. *C7*	192	210			213	9.60	10.15
Rankin, Pa. *A5*	173	187			193	9.00	9.55
So. Chicago *R5*	173	187			193	8.65	9.20
S. San Fran. *C6†*				236		9.95	10.50†
SparrowsPt. *B3****	175			214	198	8.75	9.425
Struthers, O. *Y1**						8.65	9.30
Worcester *A5*	179					9.30	9.85
Williamsport *S5*							

* Zinc less than .10¢. *** .10¢ zinc.
** 11-12¢ zinc. † Plus zinc extras.
‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*		10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70		
Detroit *D1*	9.05	10.50	12.70	15.70	
Detroit *D2*	9.05	10.50	12.70		
Dover, O. *G4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60		
Franklin Park, Ill. *T8*	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. *C11*			12.90	16.10	19.30
Indianapolis *R3*	9.10	10.55	12.60	15.60	18.55
Los Angeles *C7*	11.15	12.60	14.80	17.80	
New Britain, Conn. *S7*	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton, *R4*		10.70	12.90	16.10	19.30
Wallingford *W1*	9.40	10.70	12.90	15.90	18.55
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *R5*	9.10	10.55	12.60	15.60	18.55

BOILER TUBES

$ per 100 ft. carload lots cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	Size B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
Babcock & Wilcox	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
National Tube	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
Pittsburgh Steel	2	13	40.28	47.21	
	2½	12	54.23	63.57	
	3	12	62.62	73.40	
	3½	11	73.11	85.70	
	4	10	97.08	113.80	

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots for minus 100 mesh

Swedish sponge iron, 98+% Fe, f.o.b. Camden or Riverton, N. J., 100 mesh, freight allowed east of Miss. River, ocean bags, 23,000 lbs. and over ..... 10.5¢

Domestic sponge iron, 98+% Fe, f.o.b. Riverton, N. J., 100 mesh, freight allowed east of Miss. River, 100 lb. bags ..... 10.5¢

100 mesh, cutting and scarfing grade, 100 lb. bags ..... 8.5¢

40 mesh, 100 lb. bags ..... 7.7¢

Canadian sponge iron, del'd in East, carloads ..... 10.5¢

Atomized iron powder, 98% + Fe, 40 mesh,, F.O.B. Easton, Pa., in 100 lb bags ..... 7.7¢

Atomized iron powder, 98% + Fe, F.O.B. Easton, Pa., in 100 lb bags—RZ-365—Freight allowed east of Miss. River 10.5¢

Atomized iron powder, 98% + Fe. Cutting and scarfing grade, F.O.B. Easton, Pa. ..... 8.5¢

Electrolytic iron, annealed, imported 99.5+% Fe .... 29.5¢

200 mesh ..... 33.0¢

Electrolytic iron, unannealed minus 325 mesh, 99+% Fe 57.0¢

Carbonyl iron size 3 to 20 micron, 98%, 99.5+% Fe.. 88.0¢ to $2.85

Aluminum, freight allowed.. 38.00¢

Brass, 5000 lb. lots..... 31.0¢ to 46.7¢

Copper, electrolytic ..... 41.00¢

Copper, atomized ..... 39.8¢ to 48.3¢

Chromium, electrolytic, 99.85% min. Fe. 03 max. Del'd ... $5.00

Lead, f.o.b. Hammond, Ind. (2000 lbs. or more) ..... 13¢

Manganese f.o.b. Extron, Pa. 46.0¢

Molybdenum, 99% ..... $3.60 to $3.95

Nickel ..... $1.05 to $1.13

Solder powder ..... 13¢ plus met. value

Stainless steel, 302 ..... $1.07

Stainless steel, 316 ..... $1.26

Tin ..... 14.00¢ plus metal value

Tungsten, 99% (65 mesh) $3.15 (nominal)

Zinc, 5000 lb & over..... 17.5¢ to 30.7¢

Bronze ..... 47.2¢ to 51.5¢

Nickel Silver ..... 48.8¢ to 53.5¢

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Pct. Discounts

Machine and Carriage Bolts	Full Container Price	30 Containers	20,000 Lb.	40,000 Lb.
½" and smaller x 6" and shorter	49	54	56	57
⅝" thru 1" x longer than 6"	35	40	43	45
Rolled thread carriage bolts ½" & smaller x 6" and shorter	49	54	56	57
Lag, all diam. x 6" & shorter	49	54	56	57
Lag, all diam. longer than 6 in.	39	44½	47	48½
Plow bolts, ½" and smaller x 6" and shorter	49	54	56	57

(Add 25 pct for broken case quantities)

Nuts, Hex, HP reg. & hvy.	Full case or Keg price
¾ in. or smaller	60½
⅞ in. to 1 in. inclusive	55½
1⅛ in. to 1½ in. inclusive	58½
1⅝ in. and larger	53½

C. P. Hex, reg. & hvy.

¾ in. and smaller	60½
⅞ in. to 1½ in. inclusive	55½
1⅝ in. and larger	53½

Hot Galv. Hex Nuts (All Types)

¾ in. and smaller	46½

Semi-finished Hex Nuts

⅝ in. or smaller	60½
¾ in. to 1½ in. inclusive	55½
1⅝ in. and larger	53½

(Add 25 pct for broken case or keg quantities)

Finished

⅞ in. and smaller	63

Rivets

	Base per 100 lb
½ in. and larger	$12.25
	Pct. Off List
7/16 in. and smaller	19

Cap Screws *Discount (Packages)*

Full Finished H. C. Heat Treat

New std. hex head, packaged		
⅝" diam. and smaller x 6" and shorter	40	26
¾", ⅞", and 1" diam. x 6" and shorter	22	3
⅝" diam. and smaller x longer than 6"	8	+12
¾", ⅞", and 1" diam. x longer than 6"	+ 6	+32

	C-1018 Steel Full-Finished Cartons	Bulk
¼" through ⅝" dia. x 6" and shorter	58	49
¾" through 1" dia. x 6" and shorter	45	33

Minimum quantity—¼" through ⅝" diam., 15,000 pieces; 1/16" through ⅝" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

	Quantity	Discount Mach. Screws	Stove Bolts
Plain Finish Cartons		60	60
Bulk			
To ¼" diam. incl.	25,000-and over	60	..
5/16 to ½" diam. incl.	15,000-200,000	60	..

Machine Screws & Stove Bolt Nuts

	Quantity	Discount Hex	Square
In Cartons		16	19
In Bulk			
¼" diam. & smaller	25,000 and over	14	16

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper	
Rolled elliptical, 18 in. or longer, 5000 lb lots	40.00
Electrodeposited	32.75
Brass, 80-20, ball anodes, 2000 lb or more	45.50
Zinc, ball anodes, 2000 lb lots .... (for elliptical add 1¢ per lb)	16.50
Nickel, 99 pct plus, rolled carbon, 5000 lb	1.02‡‡
(Rolled depolarized add 3¢ per lb)	
Cadmium	1.55
Tin, ball anodes $1.13 per lb (approx.).	

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	68.70
Copper sulphate, 100 lb bags, per cwt.	22.15
Nickel salts, single, 100 lb bags	36.00
Nickel chloride, freight allowed, 300 lb	42.00
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums .... (Philadelphia price 24.50)	24.05
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum N. Y.	48.00
Chromic acid, flake type, 10,000 lb or more	30.44

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.7
Chicago	140.9
San Francisco-L. A.	148.6

Dec. 1955, value, Class B or heavier 6 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

STEEL SERVICE CENTERS

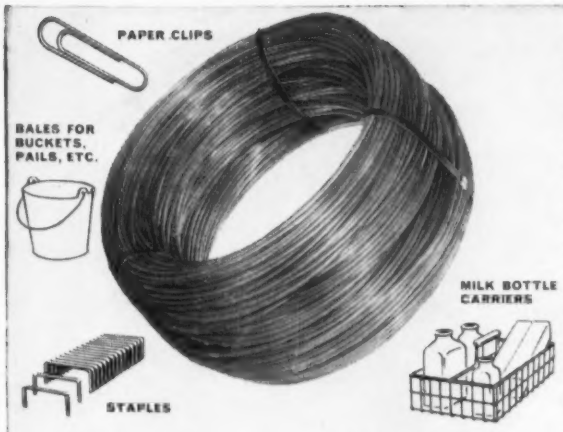
Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets: Hot-Rolled (18 ga. & hvr.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (18 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled (merchant)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4140 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4140 Annealed
Atlanta		8.59	9.87	10.13	8.64	8.97	9.05	9.01	10.68				
Baltimore	$.10	8.10	9.00	9.78	8.58	8.76	8.60	8.75	12.43	16.28	15.28	19.83	19.08
Birmingham		8.18	9.45	10.46	8.51	8.89	9.00	8.99					
Boston	.10	9.48	10.54	11.55	9.84	10.17	10.13	10.26	13.49*	16.81	15.81	20.21	19.56
Buffalo	.15	8.40	9.15	11.22	8.90	9.35	9.40	9.30	11.60*	16.34	15.15	19.01	18.95
Chicago	.15	8.35	9.60	10.25	8.66	9.04	9.15	9.14	9.30	16.20	15.20	19.70	18.95
Cincinnati	.15	8.49	9.65	10.60	8.98	9.42	9.71	9.46	11.68*	16.52	15.52	20.02	19.27
Cleveland	.15	8.33	9.60	10.35	8.78	9.28	9.54	9.25	11.40*	16.31	15.31	19.81	19.06
Denver	.20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19				20.84
Detroit	.15	8.58	9.85	10.60	9.03	9.41	9.71	9.45	9.66	15.46	15.48	18.81	19.23
Houston		8.10	8.60		8.15	8.45	8.05	8.10	11.10	16.20	15.25	19.65	18.95
Kansas City	.20	9.02	10.27	10.82	9.05	9.38	9.46	9.42	9.87	20.02	15.47	20.02	19.27
Los Angeles		8.70	11.20	12.15	9.15	9.10	9.00	9.10	12.95	17.05	16.10	21.05	20.35
Memphis	.15	8.55	11.80 9.80		8.60	8.93	9.01	8.97	12.11*				
Milwaukee	.15	8.48	9.73	10.38	8.80	9.18	9.37	9.28	9.54	16.34	15.34	19.84	19.09
New York	.10	8.97	10.23	10.66	9.74	9.87	9.84	10.09	13.31*	16.16	15.60	20.10	19.35
Norfolk	.20	8.20			8.90	8.65	9.20	8.90	10.70				
Philadelphia	.10	8.10	10.00	10.42	8.80	8.85	8.60	8.75	12.05*	16.58	15.58	20.08	19.33
Pittsburgh	.15	8.33 8.60	9.60 9.95	10.60 11.05	8.76	9.05	9.15	9.14	11.40*	16.20	15.20	19.70	18.95
Portland		10.00[1]	11.75[2]	13.30[3]	11.95[4]	11.50[5]	11.10[6]	9.85[7]	16.00	18.50	17.45	20.75	20.25
San Francisco	.10	9.45	10.85	11.10	9.55	9.70	9.60	9.80	13.10	17.05	16.10	21.05	20.35
Seattle		9.95	11.15	12.20	10.00	9.70	9.80	10.10	14.05	17.15	16.35	20.65	20.15
Spokane	.15	10.10	11.30	12.15	10.15	9.85	9.95	10.25	14.20		17.35	21.55	21.05
St. Louis	.15	8.69	9.94	10.61	9.04	9.42	9.63	9.52	9.93	16.58	15.58	20.08	19.33
St. Paul	.15	8.94	10.19	10.86	8.99	9.45	9.53	9.37	9.81		15.41		19.21

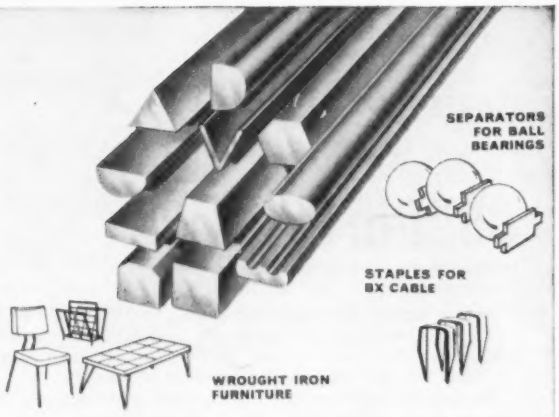
Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. **All sizes except 18 and 16 gage.

†† 10¢ zinc. ‡ Deduct for country delivery. * C1018—1 in. rounds. [1] 10 ga. x 36" x 120"; [2] 20 ga. x 36" x 120"; [3] 26 ga. x 30" x 96"; [4] ⅛" x 1" in lots of 1000 to 9999; [5] sheared plate ¼" x 84" in lots of 1000 to 9999; [6] 3" x 5.70" in lots of 1000 to 9999; [7] M-1020—1-in. rounds in lots of 1000 to 9999.

(Effective Sept. 8, 1958)



ROUND WIRE—Sizes and finishes to meet almost any specification—$\frac{5}{16}$" on down, in coppered, tinned, bright, galvanized, and other finishes. Made with exactness and uniformity to insure excellent forming and workability. Mill catchweight coils up to 600# or single length Econo-Coils up to 3000# can be supplied, depending on quality, finish and gauge.

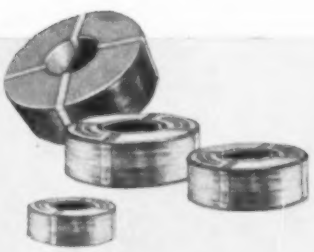


STANDARD AND SPECIAL SHAPES—Cut costs where it counts most—on forging, stamping, rolling and machining for moldings, product trim or other fabrication. Many shapes and sizes are available—V-shaped, oval, square, rectangular, keystone-shaped, and others. It will pay you to check their many cost-saving possibilities.

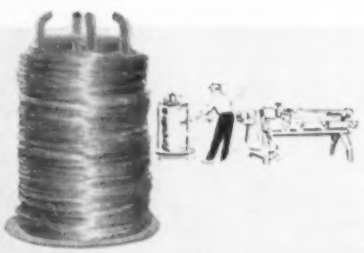
You can do it BETTER at LESS COST with...

CONTINENTAL® WIRE

In practically any size, finish, temper or analysis in low and medium low carbon steels



FINE AND SPECIALTY WIRE
Staple wire, tag wire, shoe wire, florists wire, pin wire, coil binding wire—an almost endless list of fine wire for special application. Many finishes, tempers and sizes.



ECONO-COIL Continuous length wire coils of 2000# to 3000# catchweight, in sizes from 12 gauge through ½" diameter. Reduces scrap loss up to 90 percent. Shipped on returnable Econo-Coil reels.

LEVERPAK—FOR FASTER, CLEANER WIRE HANDLING

Saves scrap, reduces down time. Protects wire from moisture, dirt, and the damage of ordinary handling. Permits long, uninterrupted runs of 500# to 650#. Easy to ship and store.

Send today for Data on Wire
Profit by our thousands of case histories that may point the way to significant savings for you... with Continental Wire.

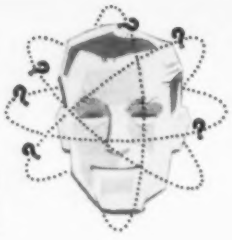
Wire Specialists for over Half a Century

CONTINENTAL

STEEL CORPORATION • KOKOMO, INDIANA

PRODUCERS OF: Manufacturer's Wire in many sizes, tempers, and finishes, including Galvanized, KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright and special shaped wire. Also Welded Wire Reinforcing Fabric, Nails, Continental Chain Link Fence, and other products.

Do your machines have a Built-in Future?



When you buy new hobbing machines, gear your thinking to the future.

It is not enough just to meet today's production requirements. The machines you buy now must have "built-in" features that will measure up to the high-speed production demands of tomorrow.

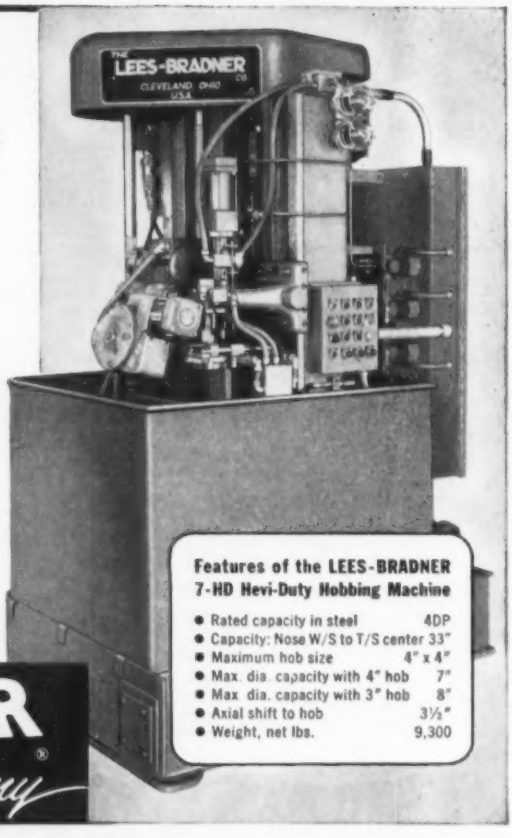
The Lees-Bradner Company manufactures a complete line of hobbing machines designed to fulfill varied requirements.

For example, this 7-HD Hevi-Duty Single Spindle Hobbing Machine is built to hob *today* at *tomorrow's* higher feeds and speeds. It's a heavy, powerful machine equipped with a new hob head featuring an axial shift of 3½ inches.

The 7-HD is also available in 4 and 6-spindle rotary models.

For complete technical information on Lees-Bradner "years ahead" Hobbing Machines send for your free 7-HD brochure . . . or contact the Lees-Bradner representative in your area.

IF YOU THREAD OR HOB . . . GET A BETTER JOB WITH A LEES-BRADNER



Features of the LEES-BRADNER 7-HD Hevi-Duty Hobbing Machine

- Rated capacity in steel 4DP
- Capacity: Nose W/S to T/S center 33"
- Maximum hob size 4" x 4"
- Max. dia. capacity with 4" hob 7"
- Max. dia. capacity with 3" hob 8"
- Axial shift to hob 3½"
- Weight, net lbs. 9,300

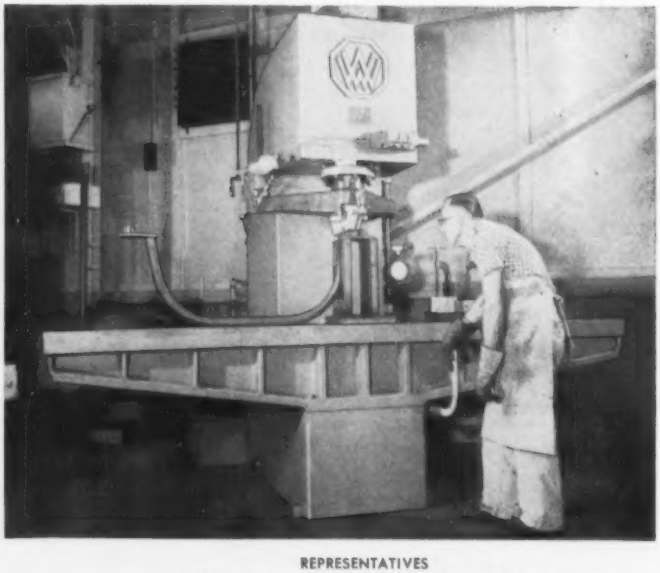
the LEES-BRADNER Company®

CLEVELAND 11, OHIO • U.S.A.

WILLIAMS-WHITE HYDRAULIC GAP FRAME PRESSES

- Sensitive and positive control of bending ram
- Self-contained hydraulic pumping unit and motor
- Adjustable stroke and hydraulic pressure
- Integral oil reservoir

The above are standard features built into every WILLIAMS-WHITE Hydraulic Gap Frame Press. Regularly built in capacities from 15 tons, with cast or welded steel plate frames, their simple design, sturdy construction, accessible work area, low initial cost and long, trouble-free life are factors to be considered when purchasing a hydraulic press for bending and straightening operations. Why not discuss your requirements with us before you buy?



The press illustrated has 100 tons capacity, 120" x20" removable table, 20" daylight and 16" stroke. It is located in a plant of North American Aviation, Inc.

BUILDERS OF MACHINERY SINCE 1854

WILLIAMS-WHITE & Co.

302 EIGHTH ST. • MOLINE, ILLINOIS

PRESSES • BULLDOZERS • BENDERS • PUNCHES • SHEARS

REPRESENTATIVES

CALIFORNIA, Los Angeles: George A. Davies Machinery Co.
MISSOURI, St. Louis or Kansas City: Robt. R. Stephens Machinery Co.
NEW YORK, Buffalo: H. D. Thweatt Co.
OHIO, Cincinnati: Columbus or Dayton: Seifreat-Elstad Machinery Co.
OREGON, Portland: Allied Northwest Machine Tool Corp.
PENNSYLVANIA, Pittsburgh: Frank Ryman's Sons
Wynnewood (Phila.): Edw. A. Lynch Machinery Co.
WASHINGTON, Seattle: Perine Machinery and Supply Co.
WISCONSIN, Milwaukee: Pagel Machinery Co.

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	.....
Birmingham *R3*	62.00	62.50*			.....
Birmingham *W9*	62.00	62.50*	66.50		.....
Birmingham *U4*	62.00	62.50*	66.50		.....
Buffalo *R3*	66.00	66.50	67.00	67.50	.....
Buffalo *H1*	66.00	66.50	67.00	67.50	.....
Buffalo *W6*	66.00	66.50	67.00	67.50	.....
Chester *P2*	66.50	67.00	67.50		.....
Chicago *I4*	66.00	66.50	66.50	67.00	.....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	.....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Everett *M6*	67.50	68.00	68.50		.....
Fontana *K1*	75.00	75.50			.....
Geneva, Utah *C7*	66.00	66.50			.....
Granite City *G2*	67.90	68.40	68.90		.....
Hubbard *Y1*			66.50		.....
Ironton, Utah *C7*	66.00	66.50			.....
Midland *C11*	66.00				.....
Minnequa *C6*	68.00	68.50	69.00		.....
Monessen *P6*	66.00				.....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*		66 50	67.00	67.50	.....
Sharpsville *S3*	66.00		66.50	67.00	.....
So. Chicago *R3*	66.00	66.50	66.50	67.00	.....
So. Chicago *W8*	66.00		66.50	67.00	.....
Swedeland *A2*	68.00	68.50	69.00	69.50	.....
Toledo *I4*	66.00	66.50	66.50	67.00	.....
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	73.00
Youngstown *Y1*	.....	.....	66.50	67.00	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Add $1.00 for 0.31-0.69 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1*, *I4* (Globe Div.), $78.00; Niagara Falls (15.01-15.50), $101.00; Keokuk (14.01-14.50), $103.50; (15.51-16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.): $64.00. Add $1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.00	23.75	23.25	25.25	—	27.00	39.75	32.25	37.00	—	16.75	—	17.00
Slabs, billets	27.00	30.25	28.00	31.50	32.00	33.25	49.50	40.00	46.50	—	21.50	—	21.75
Billets, forging	—	36.50	37.25	38.00	41.00	40.50	62.25	47.00	55.75	28.25	28.25	28.75	28.75
Bars, struct.	42.00	43.00	44.25	45.00	48.00	47.75	73.00	55.50	64.75	33.75	33.75	34.25	34.25
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Rod HR	40.00	40.75	42.00	42.75	45.50	45.25	69.25	52.50-52.75	61.50	32.00	32.00	32.50	32.50

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11*; Brackenridge, Pa., *A5*; Butler, Pa., *A7*; Vandergrift, Pa., *U1*; Washington, Pa., *W2*, *J2* Baltimore, *E1*; Middletown, O., *A7*; Massillon, O., *R3*; Gary, *U1*; Bridgeville, Pa., *U2*; New Castle, Ind., *I2*; Detroit, *M2*; Louisville, O., *R5*.

Strip: Midland, Pa., *C11*; Waukegan, Cleveland, *A5*; Carnegie, Pa., *S9*; McKeesport, Pa., *F1*; Reading, Pa., *C2*; Washington, Pa., *W2*; W. Leechburg, Pa., *A3*, Bridgeville, Pa., *U2*; Detroit, *M2*; Canton, Massillon, O., *R3*; Harrison, N. J., *D3*; Youngstown, *R5*; Sharon, Pa., *S1*; Butler, Pa., *A7*; Wallingford, Conn., *U3* (plus further conversion extras); *W1* (25¢ per lb. higher); New Bedford, Mass., *R6*; Gary, *U1* (.25¢ per lb higher).

Bar: Baltimore, *A7*; S. Duquesne, Pa., *U1*, Munhall, Pa., *U1*; Reading, Pa., *C2*; Titusville, Pa., *U2*; Washington, Pa., *J2*; McKeesport, Pa., *U1*, *F1* Bridgeville, Pa., *U2*; Dunkirk, N. Y., *A5*; Massillon, O., *R5*, S. Chicago, *U1*; Syracuse, N. Y., *C11*; Watervliet, N. Y., *A3*; Waukegan, *A5*; Canton, O., *T5*, *R3*; Ft. Wayne, *I4*; Detroit, *R5*; Gary, *U1*; Owenboro, Ky., *G5*; Bridgeport, Conn., *N8*.

Wire: Waukegan, *A5*; Massillon, O., *R3*; McKeesport, Pa., *F1*; Ft. Wayne, *J4*; Harrison, N. J., *D3*; Baltimore, *A7*; Dunkirk, *A3*; Monessen, *P1*; Syracuse, *C11*; Bridgeville, *U2*; Detroit, *R5*.

Structurals: Baltimore, *A7*; Massillon, O., *R3*; Chicago, Ill., *J4*; Watervliet, N. Y., *A3*; Syracuse, *C11*; S. Chicago, *U1*.

Plates: Baltimore, *E1*; Brackenridge, Pa., *A3*; Chicago, *U1*; Munhall, Pa., *U1*; Midland, Pa., *C11*; New Castle, Ind., *I2*; Middletown, *A7*; Washington, Pa., *J2*; Cleveland, Massillon, *R3*; Coatesville, Pa., *C15*; Vandergrift, Pa., *U1*; Gary, *U1*.

Forging billets: Midland, Pa., *C11*; Baltimore, *A7*; Washington, Pa., *J2*; McKeesport, *F1*; Massillon, Canton, O., *R5*; Watervliet, *A3*; Pittsburgh, Chicago, *U1*; Syracuse, *C11*; Detroit, *R5*; Munhall, Pa., S. Chicago, *U1*; Owensboro, Ky., *G5*; Bridgeport, Conn., *N8*.

(Effective Sept. 8, 1958)

SPRINGS
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Precision engineered — low cost!

Our widely diversified experience and ample manufacturing facilities; the ability to produce specification springs of consistent uniformity — are reasons why so many of the nation's leading manufacturers specify HAN-DEE.

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THE HAN-DEE SPRING & MANUFACTURING COMPANY

2070 PARK STREET, HARTFORD, CONNECTICUT

ANOTHER PANNIER MASTER MARKER!

PANNIER'S INSPECTORS' HAMMERS WEAR LONGER

Many styles and sizes for metal marking. Letters, numbers or symbols on either or both ends; interchangeable type heads available.

Write for data.

MONEY-SAVING FEATURES:

- Sturdy, balanced construction
- Long-lasting tool steel head
- A style for every (any) need
- Sharp, clean marking

BIRTHMARKED MATERIALS

MARKING DEVICES

THE PANNIER CORPORATION

206 SANDUSKY STREET PITTSBURGH 12, PA.

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FERROALLOY PRICES

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, .30-1.00% max. Si.

0.02% C....	41.00	0.50% C....	38.00
0.05% C....	39.00	1.00% C....	37.75
0.10% C....	38.50	1.50% C....	37.50
0.20% C....	38.25	2.00% C....	37.25

4.00-4.50% C, 60-70% Cr, 1-2% Si.. 28.75
3.50-5.00% C, 57-64% Cr, 2.00-4.50% Si 27.50
0.025% C (Simplex) 36.75
0.10% C, 52-57% Cr, 2.00% max Si. 37.50
7-8½% max C, 50-55% Cr, 3-6% max Si 22.50
7-8½% max C, 50-55% Cr, 3% max Si 25.00

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule. Add 5¢ for each additional 0.25% of N.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C $1.31
0.50% max. C 1.31
9 to 11% C, 88-91% Cr, 0.75% Fe... 1.40

Electrolytic Chromium Metal

Per lb of metal 2" x D plate (⅛" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.

Carloads $1.29
Ton lots 1.31
Less ton lots 1.33

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-45%, C 0.05% max.) Carloads, delivered, lump, 3-in. x down, packed.

Price is sum of contained Cr and contained Si.

	Cr	Si
Carloads, bulk	27.50	14.20
Ton lots	32.75	15.65
Less ton lots	34.35	17.30

Calcium-Silicon

Per lb of alloy, lump, delivered, packed. 30-33% Cr, 60-65% Si, 3.00 max. Fe.

Carloads 25.65
Ton lots 27.95
Less ton lots 29.45

Calcium-Manganese—Silicon

Cents per lb of alloy, lump, delivered, packed.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads 24.25
Ton lots 26.15
Less ton lots 27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.

Ton lots 21.15
Less ton lots 22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.

Carload lots 18.45
Ton lots 19.95
Less ton lots 21.20

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed 19.20
Ton lots to carload packed 21.15
Less ton lots 22.40

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.25
Johnstown, Pa.	12.25
Neville Island, Pa.	12.25
Sheridan, Pa.	12.25
Philo, Ohio	12.25
S. Duquesne	12.25

Add or substract 0.1¢ for each 1 pct Mn above or below base content.

Briquets, delivered, 66 pct Mn:

Carloads, bulk 14.80
Ton lots packed in bags 17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$100.50
19 to 21%	3% max.	102.50
21 to 23%	3% max.	105.00

Manganese Metal

2 in. x down, cents per pound of metal delivered.

95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed 45.75
Ton lots 47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.

Carloads 34.00
Ton lots 36.00
250 to 1999 lb 38.00
Premium for Hydrogen-removed metal 0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn 25.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads (Bulk)	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	32.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80.85% Mn, 5.0-7.0% Si ...	28.60	31.40	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.

Carloads bulk 12.80
Ton lots, packed 14.45
Briquet contract basis carloads, bulk, delivered, per lb of briquet 15.10
Packed, pallets, 3000 lb up to carloads 16.50

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00.

Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.

	Ton lots, packed	Carloads, packed
96.75% Si, 1.25% Fe..	24.20	22.90
98% Si, 0.75% Fe	24.95	23.65

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.

Carloads, bulk 7.70
Ton lots, packed 10.50

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.

50% Si....	14.20	75% Si....	16.40
65% Si....	15.25	85% Si....	18.10
	90% Si....	19.50	

Ferrovanadium

50-55% V delivered, per pound, contained V, in any quantity.

Openhearth 3.20
Crucible 3.30
High speed steel (Primos) 3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
100 to 1999 lb..	2.40	3.30	4.55

(Effective Sept. 8, 1958)

Alsifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads, bulk ..... 10.35¢
Ton lots ..... 11.70¢

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo $1.28

Ferrocolumbium, 50-50%, 2 in. x D, delivered per pound contained Cb.

Ton lots $4.00
Less ton lots..... 4.05

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Sb plus Ta $3.80

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo.. $1.68

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $5.00 unitage, per gross ton $120.00
10 tons to less carload $131.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots $1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton $240.00

Ferrotungsten, ¼ x down packed, per pounds contained W, ton lots delivered ..... $2.15 (nominal)

Molybdic oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa. $1.41
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.38

Simanal, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed per lb.

Carload, bulk lump ..... 18.50¢
Ton lots, packed lump ..... 20.50¢
Less ton lots ..... 21.00¢

Vanadium oxide, 86-89% V_2O_5 per pound contained V_2O_5 .... $1.38

Zirconium, per lb of alloy

35-40% f.o.b. freight allowed, carloads, packed ..... 27.25¢
12-15%, del'd lump, bulk-carloads ..... 9.25¢

Boron Agents

Borosil, per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B

2000 lb carload $5.50

Bortram, f.o.b. Niagara Falls.

Ton lots per pound ..... 45¢
Less ton lots, per pound ..... 50¢

Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b., Suspension Bridge, N. Y., freight allowed.

Ton lots per pound ..... 14.00¢

Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots. F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up $1.20

10 to 14% B ..... .85
14 to 19% 1.20
19% min. B 1.50

Grainal, f.o.b. Cambridge, O., freight, allowed, 100 lb and over

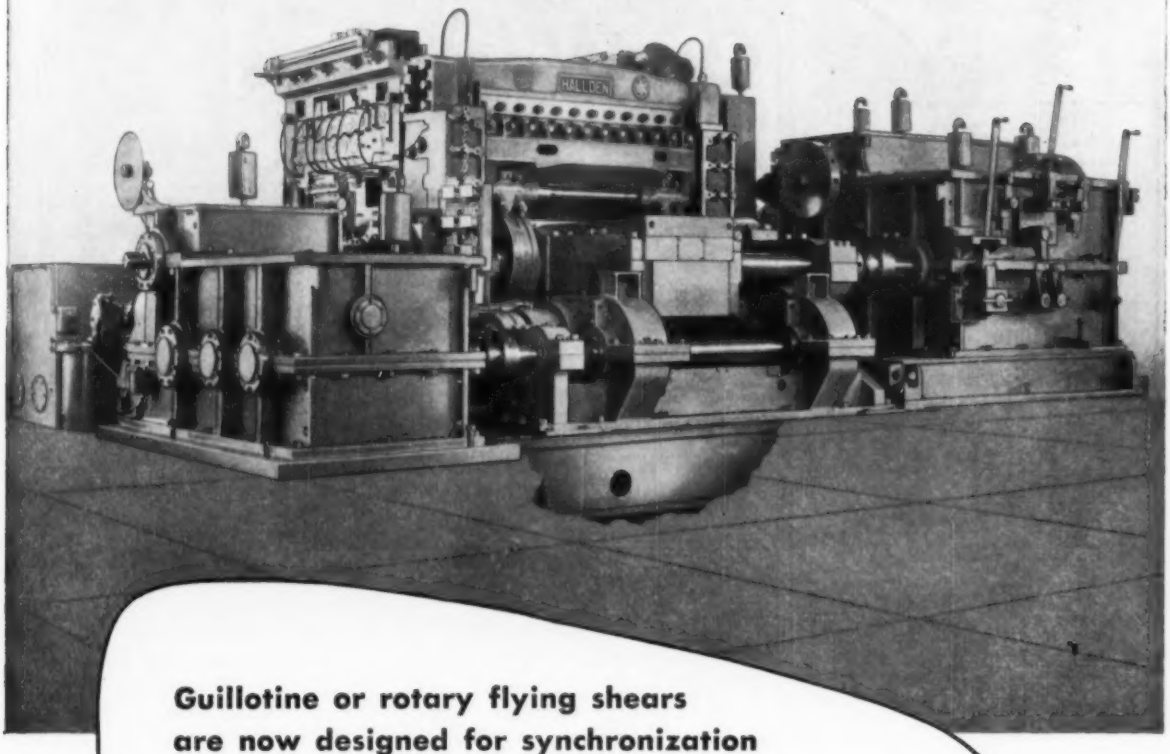
No. 1 ..... $1.05
No. 79 ..... 50¢

Manganese-Boron, 75.00% Mn, 15.20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.

Ton lots (packed) $1.46
Less ton lots (packed) 1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots 2.15

SYNCHRONIZED "On the Fly"



Guillotine or rotary flying shears are now designed for synchronization adjustment without stopping the machine.

Automatic Shears

designed and built by

HALLDEN

THE SHEARING SPECIALISTS

THE HALLDEN MACHINE COMPANY • THOMASTON, CONNECTICUT

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ELECTRICAL POWER EQUIPMENT IN STOCK

DC MOTORS

Qu.	H.P.	Make	Type	Volts	RPM
1	3900	New Elliott	Enc. F.V.	475	320
1	3900	New Whse.	Enc. F.V.	525	600
1	2250	New Elliott	Enc. F.V.	600	280/300
1	2200	G.E.	MCF	600	400/500
1	1750	New Elliott	Enc. F.V.	250	175/350
8	1500	New Whse.	Enc. F.V.	525	600
1	1375	G.E.	MCF	415	1300
1	1300	G.E.	MCF-12	300	200/400
1	1200	G.E.	MCF	600	450/600
1	1000	Whse.		500	800/2000
1	940	Whse.	QM	250	140/170
2	940	S.S.	Enc. F.V.	600	800/1800
2	800	G.E.	MCF	250	400/750
2	750	G.E.	MCF	600	450/900
1	750	G.E.	MCF	600	300/720
1	750	G.E.	MCF	600	120/360
2	645	S.S.	Enc. F.V.	300	1000
4	600	Whse.		250	275/550
1	500	G.E. B.B.	TLF-2656H	250	2000/3600
1	500	G.E.	MPC-10	250	188/400
3	450	Whse.		550	415
2	400	G.E.	CY-275	300	1000/1500
1	300	Cr.Wh.	H-102 B.B.	230	1200
2	300	G.E.	MPC	230	400
2	275	G.E. B.B.	TLC-168	250	2000/4000
1	225	G.E. B.B.		250	1150/3600
1	200	Rel. B.B.	T-663-D.P.	240	1150
1	200	Rel. B.B.	T-664-D.P.	240	850
1	200	Whse.	CB-207.4	250	850/1200
1	150	Cr.Wh.	CMC-65H	230	1150
1	150	G.E. B.B.	TLC-74	250	1150/3500
1	150	Rel. B.B.	T-663-D.P.	240	850/1700
1	150	G.E. B.B.	CD	600	250/750
1	120	G.E. B.B.	TLC-50	250	1950/5000
1	125/150	New Whse.	CB-210.3	230	300/1200
1	120	Rel. B.B.	1050T	230	575/900
2	125	Whse.	SK-186	230	450/1200
1	125	Whse.	SK-185	230	350/1050
1	100	G.E.	CDP-115	230	1750
2	100	Whse.	SK-181	230	450/1800
1	75	Rel. B.B.	T-663 D.P.	240	500/1000
1	75	G.E. B.B.	CD-1285-D.P.	600	850
1	60/75	Rel. B.B.	T-664-D.P.	240	300/1200
1	40	Rel. B.B.	TY 663	240	300/1200
1	25/33	Rel. B.B.	TY 563	240	300/1200
2	60	Rel. B.B.	T-406-D.P.	240	1750/2400
1	50	Rel. B.B.	T-405-D.P.	240	1750
1	40	Rel. B.B.	T-405-D.P.	240	1750
6	40	Rel. B.B.	385F. TEFC	230	500/1500
1	30/40	Rel. B.B.	T-564-D.P.	240	300/900

MERCURY ARC RECTIFIERS

3—150 KW, G.E., Sealed Tube Ignitron Unit Substation load centers 275 V. D.C., 2300 V. A.C. Pyranol filled transformers complete.
2—150 KW, G.E., Ignitron, 245 V. D.C.—230 V. A.C., air cooled transformers with controls.

MG SETS—3 Ph. 60 Cy.

Qu.	K.W.	Make	RPM	DC Volts	AC Volts
1	2000	G.E.	514	600	2300/4600
2	1750/2100	G.E.	514	250/300	2300/4600
1	1750	G.E.	514	600	2300/4600
1	1500	G.E.	720	600	6800/13200
1	1500	G.E.	600	600	11000/6600
1	1500	S.S. 3 unit	720	600	11000/6600
1	1500	Cr.Wh. 4 unit	720	106	2300
2	1000	G.E.	720	600	6600/13200
2	750	G.E.	720	250/300	6800/13200
1	500	G.E.	900	125/250	440
1	350	G.E.	900	125	440/2300/4160
1	300	G.E.	1200	250	2300/4000
1	300	G.E.	1200	250	440/2300
1	240	Whse.	900	125	220/440
1	200	G.E.	1200	250	440/550
1	200	Whse.	1200	550	2200
1	200	El.Mhy.	1200	250	2300/4600
1	150	G.E.	1200	275	2300
1	150	Whse.	1200	275	2300
1	150	G.E.	1200	125	440
1	140	Cr.Wh.	600	125/250	2300
1	125	G.E.	1800	250	220/440
1	100	G.E.	1170	250	220/440
1	100	Cr.Wh.	1800	240	440
2	100	Cr.Wh.	1160	525	220/550
1	100	G.E.	1200	250	2400/4100
2	75	Whse.	1200	125	440

TRANSFORMERS

Qu.	KVA	Make	Type	Ph.	Voltages
3	3333	Whse.	OISC	1	13800 x 2300
1	1500	G.E. auto	HT	3	4000/4200/4400
3	1000	G.E.	OA/FA	1	13800 x 230/460
2	750	G.E.	Pyranol	1	4800x85/55-255/165
3	500	Kuhl	OISC	1	12300 x 6600
3	333	G.E.	HS-W4R	1	2400/4160 240 x 480
3	333	G.E.	OISC	3	2400/4160Y x 600
3	150	G.E.	OISC	1	33000x2300/4000Y
3	100	Whse.	SK	1	4600x460/230/115

CRANE & MILL MOTORS

230 V., D.C.

Qu.	H.P.	Make	RPM	Type
14	12/15	Whse.	700/800	MCA-30, Series
1	20	Whse.	975	K-5, Series
2	22	G.E.	650	MD8-408
2	25	G.E.	725	CO-1808, Series
1	35	Whse.	480	CK-9 Comp. S.B.
1	35	Whse.	480	CK-9 Sh. R.B.
1	45	Whse.	685	CK-9 Comp. S.B
3	50	G.E.	850	COM-1830 Comp.
3	50	Whse.	525	CK-9 Shunt R.B.
2	50	Whse.	600	CK-9 Comp. R.B.
1	50	G.E.	525	COM-1830AE B.B.
1	50	Cr.Wh.	550	SW-50 Comp.
1	100	G.E.	475	CO-1832 S.B.
6	100/140	Whse.	500/415	MC-90 R.B.

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Tel. OLdfield 3-3334

Inquiries Top Sales On West Coast

Used machine dealers there are getting lots of calls, but turning them into orders is often difficult.

But 1958 sales will pass 1957 levels if gains predicted for this fall come true.

▪ "We're very busy keeping up with all the inquiries these days. But when it comes to signing on the dotted line, customers drag their feet." That's how the sales manager of one major West Coast used machinery firm sees it. And it's pretty much the consensus up and down the Coast.

Why the slow buying pace? Most dealers point a finger at the uncertainty in government business. Their customers, mainly in aircraft-missile-electronic work, just aren't too sure about fall and winter orders.

Lathes Wanted — Right now southern California manufacturers are after big lathes. They want 40-in. and 60-in. swings on 20 ft to 24 ft beds. They will buy in the local market but are not yet ready to pay the freight charges for eastern machines.

Large boring mills are moving well. Buyers want machines with a swing in the 54-in. to 90-in. range.

Sheet metal equipment still rates the "best seller" tag, as it has all through this year. Expanding electronics firms grab them up. Sheet metal shops serving the air-conditioning industry also help keep sales humming.

Phones Busy — While northern California used machinery dealers aren't overworking their cash registers these days their telephones are busy.

"There's a lot of potential buying activity," one dealer says, "but not enough action now. We're getting a flood of inquiries — but not enough of them are turning into sales."

Sales Gain Predicted—However, there's considerable agreement that business in the first half, though down 20 pct from the like 1957 period, is still up about 10 pct from last year's final half.

No one doubts the bottom has been reached in northern California. Consensus is that sales for 1958 should wind up about 5 pct to 10 pct ahead of the previous 12 months.

What's Moving—What is selling in northern California? Shears, brakes, rolls, lathes, drills, and milling machines. But, dealers emphasize, even these aren't hot.

Depreciation Change

Buyers of used or new machinery and equipment may now deduct an extra 20 pct of the cost for depreciation in the year of the purchase.

President Eisenhower has signed a technical tax law which grants the extra 20 pct depreciation allowance in addition to the normal first year depreciation. The law applies to equipment and facilities purchased after last Dec. 31, but does not include real estate or buildings.

CONSIDER GOOD USED EQUIPMENT FIRST

BENDING ROLLS
8' x ¾" Bertsch Initial Type
12' x 5/16" Bertsch Initial Type
12' x ⅝" Hilles & Jones Pyramid Type
13' x 3/16" Bertsch Initial Type—NEW
32' x ⅝" Baldwin Pyramid Type

BORING MILL—VERTICAL
144" Cincinnati Hypro Vertical Boring Mill
Two Swivel Type Ram Heads

CRANES—OVERHEAD ELECTRIC TRAVELING

7½ ton P&H	60' Span 230 Volt D.C.
8 ton P&H	55' Span 220/3/60
10 ton P&H	50' Span 230 Volt D.C.
10 ton P&H	39' Span 230 Volt D.C.
10 ton Milwaukee	57' Span 220 Volt D.C.
10 ton Shaw	48' Span 230 Volt D.C.
10 ton Whiting	75' Span 220/3/60 A.C.
10 ton Shaw	120' Span 230 Volt D.C.
15 ton P&H	50' Span 230 Volt D.C.
15 ton Northern	54' Span 230 Volt D.C.
15 ton Shepard Niles	56' Span 230 Volt D.C.
15 ton N-B-P	100' Span 220/3/60 A.C.
120 ton Shepard Niles	77' Span 220/3/60

DRAW BENCHES
3000 lb. Draw Bench, 20 ft. Pull
7000 lb. Draw Bench, 50 ft. Pull—New 1956
10,000 lb. Draw Bench, 50 ft. Draw—LATE

FORGING MACHINES
17" to 5" Acme, Ajax, National

GRINDER
20" Murray-Way Belt Grinder, Roll Feeds

HAMMERS—BOARD DROP—STEAM DROP—STEAM FORGING 800 lb. to 12,000 lb. Incl.

LEVELERS—ROLLER
54" McKay 17 Rolls 1¾" dia.
60" Aetna Standard, 17 Rolls 1¾" dia.
72" McKay, 15 Rolls 1¾" dia.
84" Bliss 17 Rolls 5½" dia.

LEVELER—STRETCHER
100 ton Hydr. Stretcher Leveler

PLANER—OPEN SIDE
70" x 110" x 16' Liberty Four Head

PRESSES—HYDRAULIC
500 ton Watson Stillman Piercing Press 48" x 72"
500 ton HPM Fastraverse, Bed 36" x 36"
600 ton Elmes 36" stroke, 48" x 45" Bet Cols.
1000 ton HPM Fastraverse, Bed 48" x 72", 36" Stroke

PRESSES—STRAIGHT SIDE
100 ton Toledo #35½, 10" Stroke, Bed 20" x 29"
215 ton Clearing, 24" Stroke, Bed 36" x 42"

PRESS—TOGGLE DRAWING
#168⅝ Toledo, 18" Stroke of Blankholder, 26" Stroke of Plunger, Bed 48" x 51"

PUNCH & SHEAR COMBINATIONS
Buffalo #1½ Ironworker
Cleveland Style C; Arch Jaw, Capy. ¾" x ¾"
Cleveland Style EF, Capy. 1¼" x 1"

ROLLING MILLS
6" x 5" Torrington Flat Wire Mill Line
3¼" x 7" Six Roll Cluster Mill
8" x 10" Single Stand Two High
10" x 14" Single Stand Two High
10" x 16" Single Stand Two High
12" x 12" Single Stand Two High
12" x 16" Single Stand Two High
16" x 24" Single Stand Two High
20" x 36" Single Stand Two High

ROLL—FORMING
18 Stand Custom Built, 2½ Shaft, will take 36" wide

ROLLS—PLATE STRAIGHTENERS
108" Bertsch, Seven Rolls 9" Dia.
72" Niles 7 Rolls 9" Dia. Motor Driven

SHEAR—ANGLE
6 x 6 x ⅝" Hilles & Jones

SHEAR LINES
36" x .020 Ga. Hallden Shear Line
96" Cleveland, Capy. 14 Ga. Pay Off & Tables

SHEARS—SQUARING
6' x 14 Ga. Edwards, Motor Drive—LATE
10' x ⅜" Niagara
14' x 3/16" Cincinnati #1814

SLITTERS
12" Waterbury Farrel, 2¾" Arbor
24" Blake & Johnson, 3½" Dia. Arbor
36" Yoder, 1½" Dia. Arbor

STRAIGHTENERS
Torrington 12-Roll Capy. 1¾" Sq., Etc.
No. 3 Medart 3 Roll, Capacity to 4½" Tubing

SWAGING MACHINES
#4A Standard 2-Die, Capy. 2¾" Tube
#6½A Fenn Capacity 3¾ Tube 1¼" Solid
10" Die Length Hydraulic Feed, LATE
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20,000 lb. Baldwin Univ. Hydraulic
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No. 100 Waterbury Farrel Thread Roller

TUBE REDUCERS
1½" Tube Reducer for steel
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60" x ⅛" Aetna Gear Box 17 Rolls.
60" x ¼" ROLL & MACHINE Gear Box 17 Rolls.

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#0 Sutton 5 Roll. Capy. 5/16" to 1" 5 Rolls.
#1 Special Sutton. Capy. ⅜" to 3⅛" 5 Rolls.
V-3 Brightman. Capy. 1" to 6" Press Type.

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5	Shaw	59'1"
5	Shaw(2)	67'11"
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Available from
LUKENS STEEL COMPANY . . .
Machining and Grinding
PIT LATHE
. . . in excellent working order.

This special Simmons lathe was manufactured and installed at our Coatesville, Pa., plant in 1951. Used infrequently, it has been serviced properly and regularly, is now available at less than one-third the original cost.

CHECK THESE OPERATING RANGES AGAINST YOUR REQUIREMENTS:

Roll Capacity—3' to 14' diameter
Between Centers—8" to 30' range
Headstock Spindle Speeds—(8 range) .5, 1.3, 1.5, 3.8, 4.0, 10.0, 11.5, 30.0
Feed Turning—Per Minute .035" minimum to 4.0" maximum
—Per Revolution .001" minimum to 8.0" maximum

Grinding Surface—*F.P.M.*	*Wheel Dia.*	*1200 RPM*	*1800 RPM*
24"	24	5000	7500
22"	22	4600	6900
20"	20	4150	6200

Equipment—Turning Carriage, Grinding Carriage and separate tool rest for journal grinding

Motors—Main Drive	40 H.P.	1500-500	230 V DC
Turning Carriage	3 H.P.	1800 RPM	230 V DC
Lombard Unit	3 H.P.	1800 RPM	230 V DC
P.R.T. to Carriage	3 H.P.	1200 RPM	230 V DC
Tailstock Mover	2 H.P.	1200 RPM	230 V DC
Grinder	15 H.P.	1800-1200	230 V DC

Weight—Approximately 62 tons

● **Please address your inquiry to Purchasing Division, 251 Lukens Building, Lukens Steel Company, Coatesville, Pa. Telephone: Coatesville 2000, Extension 223 or 224**

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6½"	to 10"	"	x .060 to .125
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Care *The Iron Age*, Chestnut & 56th Sts., Phila. 39

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Reply to La Consolidada, S. A.
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The IRON AGE Chestnut & 56th Sts., Philadelphia 39, Pa.

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Stops Losses making Dies and Templates

Popular package is 8-oz. can fitted with Bakelite cap holding soft-hair brush for applying right at bench; metal surface ready for layout in a few minutes. The dark blue background makes the scribed lines show up in sharp relief, prevents metal glare. Increases efficiency and accuracy.

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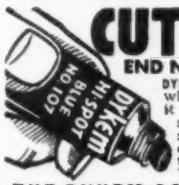

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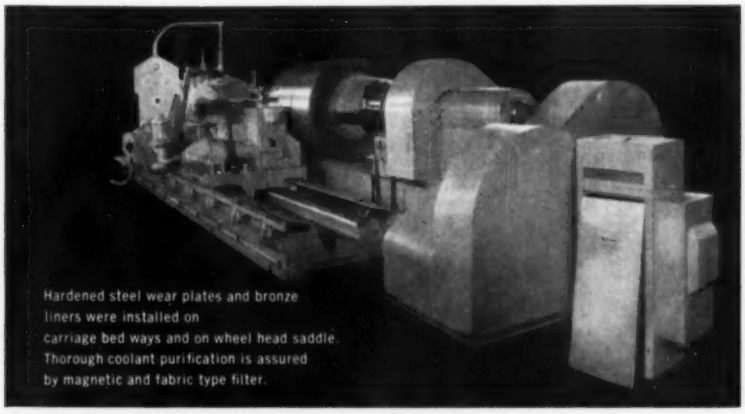
Old Mesta gets "a new lease on life" through Simmons Engineered Rebuilding



Hardened steel wear plates and bronze liners were installed on carriage bed ways and on wheel head saddle. Thorough coolant purification is assured by magnetic and fabric type filter.

Today this huge roll grinder qualifies for precision grinding beyond anything it could do before

Machine tools that have been robbed of efficiency by hard use—that have worn out their accuracy—too weary to do a full day's work—are more of a liability than an asset to your plant operation.

Why put up with them? You only have to send your offending boring mills, planers, lathes, grinders, etc., to Simmons... for *Engineered Rebuilding.*

Simmons guarantees to return them to manufacturers' original specifications—at tremendous savings. Your equipment is completely dismantled—stripped to the bare castings—faulty parts are rebuilt or replaced—everything is thoroughly cleaned—and modernized, where necessary.

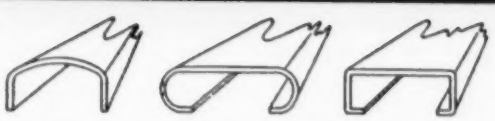
For example, the heavy 60-in. x 228-in. Mesta Roll Grinder, illustrated, originally had a gear and V-belt reduction drive to work spindle. Gear tooth vibration limited the degree of perfection to which a back-up roll could be finished.

Simmons installed a new V-belt drive. This eliminated vibration, making it possible to grind large rolls to a fine mirror finish. A higher work speed range was provided by increased HP to roll drive. A higher-capacity, more efficient coolant pump was installed. Other important modifications boosted efficiency beyond original performance. And, besides: big saving, in time and cost, to the customer.

Write, wire or 'phone your problem today. Simmons Machine Tool Corporation, Main Office and Plant, 1721 North Broadway, Albany 1, N.Y. (New York City office: 50 East 42nd Street, New York 17, N. Y.)

SIMMONS
MACHINE TOOL CORPORATION
Since 1910... *Builders and rebuilders of unconditionally guaranteed machine tools.*

Formed steel bridge rails



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MAY WE BID ON YOUR REQUIREMENTS

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ALL SIZES, pressed . . rolled . . extruded . . forged to accurate specifications from carbon, alloy, stainless steels and special metals. Modern metallurgical, die, heat-treating and rough machining facilities.

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PERFORATED METALS

The few perforations illustrated are indicative of the wide variety of our line—we can *perforate almost any size perforation in any kind of metal or material required.* Send us your specifications.

Sixty-seven years of manufacturing perforated metals for every conceivable purpose assure satisfaction.

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TIN, STEEL, COPPER, ALUMINUM, BRONZE, BRASS, ZINC, ANY METAL, ANY PURPOSE

CHARLES MUNDT & SONS
50 FAIRMOUNT AVE. JERSEY CITY, N. J.

The IRON AGE Metal Show Issue October 16, 1958

With this special issue comes an opportunity to reinforce your selling efforts at the most "competitive" metal show in years.

Capitalize on this timely editorial fare to precondition executives to watch for your exhibit at the show . . . to inform those who won't be able to attend . . . to exhibit in print products you won't be exhibiting at the show.

MORE FOR YOUR SPECIAL ALLOY DOLLAR

16-page Metal Show editorial feature packed with information on special heat-resistant, corrosion-resistant and abrasion-resistant alloys . . . and other alloys designed with special electrical and physical properties. A subject with across-the-board interest for metalworking executives.

NEW PRODUCTION IDEAS

This special section will detail the latest in new equipment and materials displayed at the Metal Show. It will be helpful not only to Metal Show visitors but will present a brief informative picture of the Show for those who can't attend.

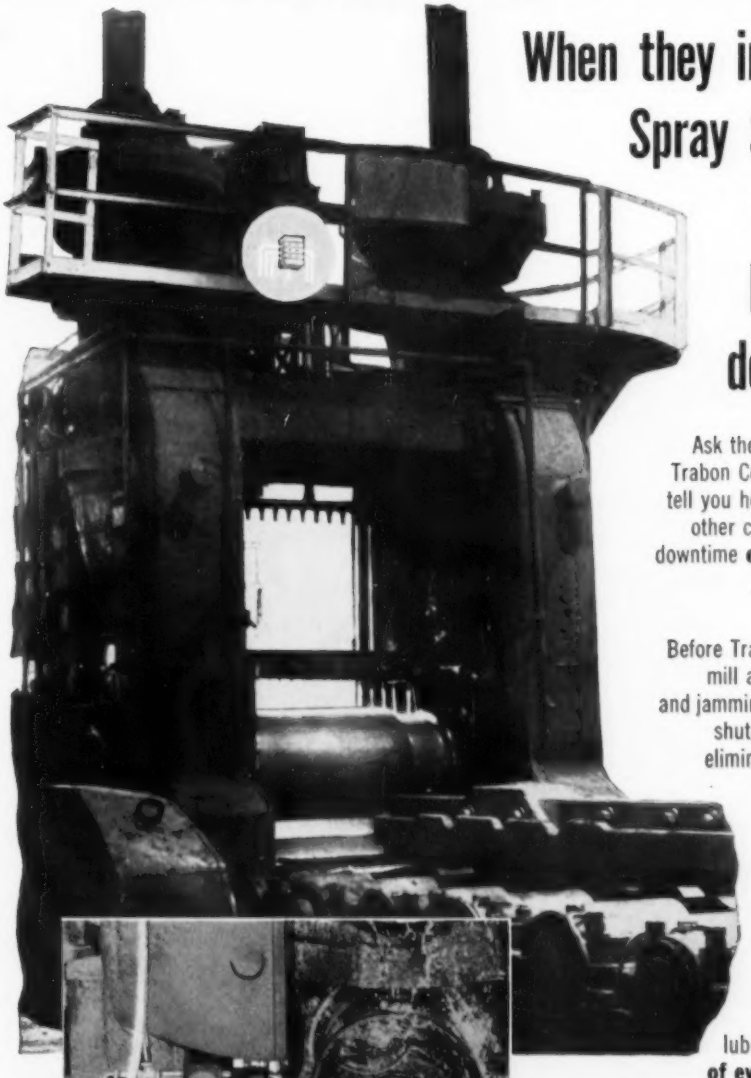
COMPLETE TECHNICAL PROGRAM AND EXHIBITORS' LIST

This reference guide to technical meetings and exhibitors' booths will help readers make the most effective use of their time at the Metal Show.

The IRON AGE Metal Show Issue, published October 16 . . . closing date, October 3.

TRABON

CENTRALIZED LUBRICATING SYSTEMS



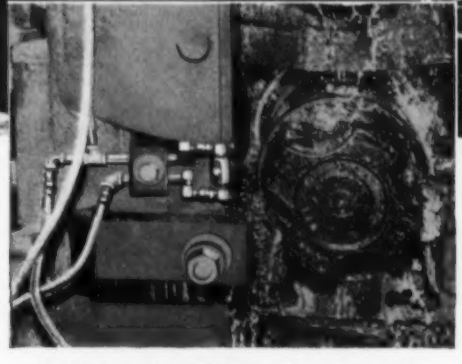
When they installed a Trabon Spray System here... they saved several hundred thousand dollars in six years

Ask the men who operate this 40" mill about Trabon Centralized Lubricating Systems! They'll tell you how a Trabon spray system, along with other changes, saved five expensive hours of downtime **every** week. How increased production time **alone** ran savings to many thousands of dollars the first year.

Before Trabon, critical roll neck bearings in this mill at an Ohio steel plant were burning up and jamming the rolls. Once Trabon was installed, shutdowns due to lubrication failures were eliminated. Bearing life more than doubled. Lubricant consumption dropped from 20 drums to 3 drums a week. For the six years Trabon has been protecting these bearings, savings in production time alone have totaled several hundred thousand dollars.

The Trabon automatic system is connected to an air pressure supply which is in constant operation. Spray lubricant is delivered for **20 seconds out of every minute** with just the right amount of fluid grease needed by the four roll neck bearings. Lubrication is dependable and positive!

You'll find this savings story repeated in **any mill** equipped with Trabon Systems. Why not get technical data by writing today!



Insets show a Trabon feeder and two spray nozzles protecting roll neck bearings on a 40" mill. Despite heat, water and dirt, Trabon delivers an exact, metered amount of lubricant to all bearings automatically.

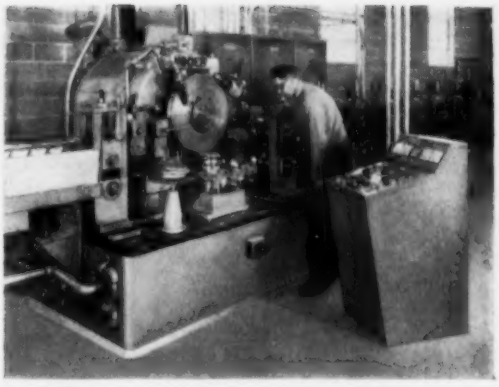
Trabon

Trabon Engineering Corporation

2881S Aurora Road • Solon, Ohio

Centrifeed OIL AND GREASE SYSTEMS *Multifeed* CIRCULATING OIL SYSTEMS

The Yoder Company uses Cutler-Hammer Motor Control. Type M electric resistance weld tube mills automatically form cold rolled steel into pipe or tubing at a rate of 35 to 150 feet per minute. Cutler-Hammer Control is provided as standard equipment.



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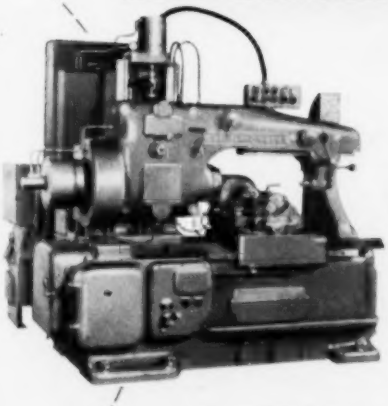
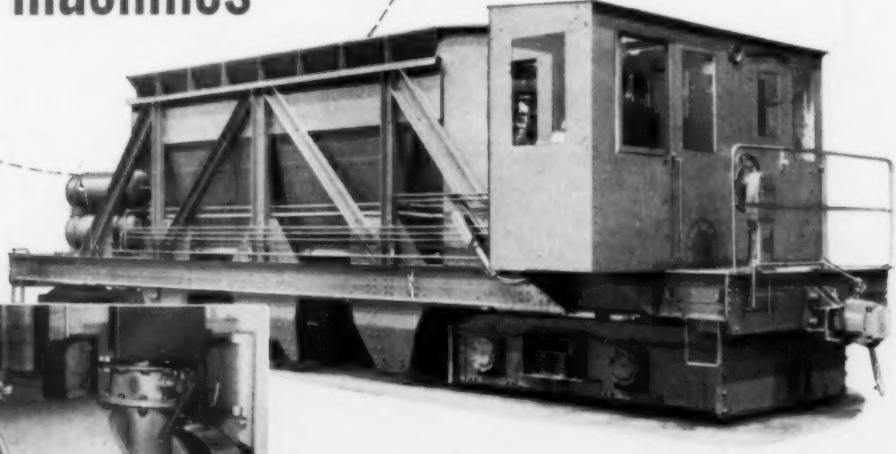
CONTROL
C·H

Choice of the leaders ...the mark of better machines



Barber-Colman Company uses Cutler-Hammer Motor Control. The 14-15 production hobbing machine uses Cutler-Hammer Relays as standard equipment.



The Atlas Car & Mfg. Company uses Cutler-Hammer Motor Control. 50 ton, double compartment, bottom dump ore transfer cars are equipped with Cutler-Hammer Control.

The Spencer Turbine Company uses Cutler-Hammer Motor Control. High volume centrifugal blowers provide the air supply for the aeration tanks at a new sewage plant. Cutler-Hammer Motor Control is supplied as standard equipment.

You too will find it pays to use Cutler-Hammer Motor Control; it installs easier, works better, and lasts longer. For detailed information write Dept. 5246. **CUTLER-HAMMER Inc., Milwaukee 1, Wisconsin.**

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Associates: Canadian Cutler-Hammer, Ltd.; Cutler-Hammer Mexicana, S. A.; Intercontinental Electronics Corporation, Inc.